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AMNESIA. COMPONENT FUNCTIONS IN REMEMBERING *

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A discussion of amnesia must involve both physiological and psychological concepts. The functions of which the term amnesia denotes the absence should be conceived as constituting a process for which "remembering" is an appropriate name (since it suggests activity) in preference to "memory," which suggests something passive only. Memory, in this limited sense of a trace which influences subsequent reactions, is something very old in the history of organisms. It is, in fact, characteristic of non-living material and the events of such a simple structure as Bayliss has shown, as a gel.

Remembering, as I use the word here, is an activity of the highest "level" of the organism in Hughlings Jackson's sense, or, in other language, of the "ego." It is, in fact, only to be completely understood in truly psychobiological terms in the sense advocated by Adolf Meyer. Remembering is not the excitation of innumerable fixed, lifeless, and fragmentary traces. It is an imaginative reconstruction built out of our attitude towards a whole mass of organized past reactions to experience (Bartlett).

Functional Factors in Remembering

In the complete sense of our analysis this activity is a personal act, and depends on the following functional factors, which can be distinguished on the basis of a conjunction of psychological analysis and clinical observation.

REGISTRATION

Defects in this process are not of great interest since they are of a type of failure of attention—for example, from distraction as in acute mania, or of the failure of attention that accompanies any severe psychological disturbance of cortical function, as in febrile delirium. Failure of registration of a different order and of a curiously localized kind may occur in hysterical conditions. The concentric limitation of the visual field is a well-known example, but much that is apparently missed in hysterical subjects is actually registered, as was demonstrated by Morton Prince in his experiments with hypnosis and automatic writing. The failure of the hysteric to attend, and therefore to register, is sometimes grotesque, as in the case of a woman patient who could see everything in the room but myself when she came to the hospital. Such instances can be so gross as to make impossible any symptomatic distinction from malingering. I shall revert later to the conception of hysteria, and its relation to malingering and the bearing of this on the problem of amnesia.

RETENTION

Failure in this on the trace theory of memory would be the most frequent and fundamental factor. But, in fact, failure in one of the other functional elements must often be mistaken for failure of retention, even in diseases where gross psychological alteration undoubtedly exists. For example, it has been found that a patient who has recovered from Korsakoff's psychosis may recollect events after his recovery that he did not appear to note at the time. Korsakoff himself noted that in some patients events occurring during the time of the illness, which they did not appear to retain at the time, were recollected years after. Bonhoeffer showed in experiments dealing with visual impressions that what was apparently not retained at the time could be recognized later. Grünthal concluded that the apparent failure of retention resulted from difficulty in invocation of engrams—that is, difficulty in recall on account of poverty of associations. I have suggested that it might result more precisely on Bartlett's analysis—failure to extract images. But we must agree with Meggendorfer that there is actually a defect of pure retention in any severe amnesic syndrome of the Korsakoff type.

RECALL

This should be differentiated as denoting two processes of very different complexity: (*a*) simple mechanical or sensorimotor or "reflex" recall; and (*b*) recall involving voluntary effort and very often proceeding along associative lines. That recall of this second more complex type should fail before retention fails is to be expected. This type of recall admittedly by definition involves the highest form of mental activity—namely, voluntary effort which is an activity of the ego in contrast to the mechanical or sensorimotor type, which presupposes retention and occurs in accordance with the stimulus response pattern so much studied by the behaviourists. This distinction seems to be confirmed not only by the experience with Korsakoff's psychosis but with the much commoner experience of fatigue or of early senile loss. In both these instances recall, for example, of a proper name may elude the subject's efforts, but recognition is readily possible. It is suggested, therefore, that in the mildest degrees of memory defect—that is, of difficulty in remembering—recall fails first and retention usually later. To regard the process of voluntary recall as a high-level function is also in accord with the data of psychogenic amnesia, which appear to be concerned almost exclusively with interference with the process of recall.

Epilepsy, when psychological rather than (as yet) demonstrable structural disease is its basis, also furnishes examples of a failure of recall which gives the appearance of retention defect. It has been found by McCurdy in epileptic dements that with effort, if the patient can be induced to make it, his capacity for remembering is much greater than formal tests would at first lead one to suppose. Nevertheless retention is a function very sus-

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ceptible to interference. I have seen retention defect as a very early symptom of brain tumour. Capacity to remember a short series of digits was lacking immediately after they had been given to the patient; there was no apparent recognition when they were re-presented. Similarly in anaesthesia, when the patient is mildly under the influence of the anaesthetic but not yet stuporous, and is still able to carry on a conversation, showing that registration and presumably some immediate retention occurs, there may be no subsequent remembering or recognition when the facts are afterwards described to the patient. Even here, however, the presumption that it is retention rather than recall that is effected by physical factors may be too readily made, as is illustrated by a remarkable case in which recovery occurred under hypnosis from a traumatically produced amnesia, related to me by Dr. I. G. Robin. The patient was under the care of Dr. Hurst at Guy's Hospital. Here, if the facts are accepted as complete—and nothing has emerged to suggest that it had been a psychogenic amnesia—a brain trauma produced a failure of memory which masqueraded as a defect of retention. Retention was in fact unimpaired, as was proved by the recovery of details under hypnosis, which apparently somehow inhibited what was actually an inhibition of recall. Furthermore, we have the interesting spectacle of a psychological process reversing a physically induced inhibition.

A possible explanation, of a sort, of the way in which recall may fail, as it did in this case, is suggested by what happens in aphasic disorders, when the patient seems to know what he wants but gets side-tracked, as it were, and produces, to his annoyance, the wrong words. Grünthal has suggested something analogous to this as the reason for the apparent memory defect in Korsakoff's psychosis. He believes that the Korsakoff patient has lost the power of directing his thoughts, so that any attempt at recall comes to an end abruptly. The train of thought goes off on its own, so to speak, with the result that confabulation occurs, as nothing more than the result of the process of voluntary recall getting side-tracked. In the Hurst-Robin case voluntary effort at recall was possible, but the effort was side-tracked or was held up till hypnosis removed the inhibition.

TIME-ORDERING OF EXPERIENCE

It is held that one of the primary mental functions is to infuse experience with a time sense. This private time is of course different from conventional time, and has no direct connexion with it. Its fundamental characteristic is a sense of time, not as a simple appreciation of duration, but of something that continuously elapses. It is difficult to disentangle the conceptual superaddition from what is probably an elementary experience. It gives a background for other experiences, and so secondarily comes to be responsible for sequences. There is, in fact, a primary time-ordering of experience, independent more or less of associated processes. The pictures stamp themselves on the unrolling time-film independently of their content.

On the basis of such a conception Van der Horst has advanced an ingenious explanation of the Korsakoff patient's failure to remember. He suggests that in Korsakoff's psychosis the memory defect is not the result of failure of immediate reproduction (which he declares to be often unimpaired), but of the loss of the "temporal sign" of experiences. For example, one of his patients when given a cigar and asked about it a quarter of an hour later, replied: "I have had a cigar, but it was last week." In Van der Horst's view the temporal sign of a personal event depends on the time order of experience in the continuum of one's individual life, and in Korsakoff's psychosis this continuity of experience is no longer felt. In answer to the question "How long have we been talking?" the Korsakoff patient answers either "a quarter of an hour" or "two hours," although he may remember the entire content of the conversation quite well. Van der Horst considers that if time order is lost for current experiences the feeling for the need of it in regard to past experiences will soon be lost also. Hence, also, the retrograde amnesia of Korsakoff's psychosis.

"PASTNESS"

I suggest that there exists as an independent function a feeling of pastness, the existence of which may be demonstrated from two kinds of experience: the *déjà vu* feeling of some epileptic attacks; and such an experience as that of a patient of mine who felt each time she underwent an experience that she had a dream, and that the dream, although not recollected, was the same as she had had on the previous occasion. The feeling of recapitulation of something that had happened previously was very distinct and independent apparently of the content, or at least of any conscious recollection of it. The feeling of pastness seems therefore a distinct and isolatable experience; it seems likely that loss of the capacity for it could have an effect on the total experience of remembering.

PERSONAL IDENTITY

Cases of massive amnesia which include all personal data are not very uncommon. The patient professes amnesia not only for the events of his previous life but for all personal data as well, including even his own name. Nevertheless, as a rule, the automatized functions, such as the educated use of words, are completely retained. Commonly also the social habits of an adult are also retained. In a few cases called "hysterical puerilism" learned habitual reactions of all kinds are also lost.

Another case presented some unusual features. The loss of personal memory had persisted for three years, and a localized personal memory for three years only had been built up, while all the previous data for the first forty years of life had disappeared. Under mild narcosis the patient re-enacted a war scene in which he identified those around him as fellow soldiers. Subsequently on gradual emergence from the narcosis he recollected all his previous life. (H. Campbell.)

It looks like the reverse process to that of the Hurst-Robin case, where a psychological process (hypnosis) undid a physically produced inhibition of recall. Here, in Dr. Campbell's case, is a physiological process (narcosis) undoing a presumably psychologically produced inhibition.

Such cases do not, however, demonstrate the existence of a discrete factor for personal identity, apart from recollection of events, as a component in the total process of remembering. For more conclusive and not merely suggestive evidence of the existence of such a factor we have to go to cases of depersonalization, where, although there is no forgetfulness, the recollected events lack the emotion of belief because they seem to belong to another existence or even to a different person.

A sense of personal identity is therefore evidently not essential to mere recollection, but it is evidently a distinct function, not emergent simply from the aggregation of other elements. It is a part of the complete experience of remembering, when the latter is considered in the full sense of the function of the highest level of the integrated healthy organisms. Schilder and Abeles record cases of amnesia (with loss of personal identity) in a wide variety of syndromes—for example, in a schizophrenic

psychosis—a manic-depressive psychosis in various organic brain diseases (head trauma, arteriosclerosis, and carbon monoxide poison), and in malingering.

Factors in Remembering	Conditions in which these functions are interfered with or appear in isolation
(1) Registration	Acute organic reaction type (delirium); manic excitement (inattention); hysteria (global inattention)
(2) Retention	Organic reaction type in general
(3) Recall	1. Simple and elementary (reflex) organic reaction type (severe degree) 2. As a voluntary act: psychogenic conditions (various, for example, hysteria) Certain forms of organic reaction type (for example, head trauma, Korsakoff's psychosis, epilepsy)
(4) Time sense	Various psychoses with depersonalization; possibly in Korsakoff's psychosis (amnesic symptom-complex)
(5) "Pastness"	Epilepsy (*déjà vu*), and anaesthetic states
(6) Associations	In schemata determined by sense organs, appetite, instincts, interests — Organic reaction types in general; psychogenic conditions
(7) Imagery ("extracted" images of Bartlett)	Korsakoff's psychosis; early senile dementia
(8) Personal identity (awareness of)	Hysteria: depersonalization in various psychoses

Psychological Factors in Amnesia

The processes (assuming registration and retention) involved in the inhibition of remembering—that is, in producing amnesia—must necessarily be concerned mainly with the inhibition of recall. Recall, as has been suggested above, may be side-tracked for physiological reasons, or it may be apparently blocked as in epileptic dementia. But the commonest mode of inhibition of recall is certainly psychological, the processes being known as repression. It has always been difficult to know precisely how repression occurs. Freud first demonstrated the importance of the process of active forgetting, but he was not descriptively precise. He described the process in a figurative way: In repression "the impulse retains its energy but no memory is left behind." This is accomplished "without the cognizance of the ego, by the 'doorkeeper' or 'censorship.'" The main evidence for the occurrence and persistence of repression comes from the resistances encountered in analysis. The process is an all-important one. "All symptoms," states Freud, "depend on repression." Repression always produces amnesia for something. "All symptoms," he says, "have a related amnesia."

I suggest that all amnesias are not due to simple fading or to active forgetting (repression). There are other possible sources of amnesia for experiences that are still retained somehow. Early mental events take place proportionately more often, for example, in visual terms—according to the evidence of recollection in psychological analysis. More importantly, the schemata of early infantile and childhood years are different from those of a later age. A breast is not remembered as such but as a large globular object, with perhaps softness and satisfaction associated. The process of repression itself is equated by Fenichel with inhibition. "Inhibition and repression are two aspects of one and the same psychological process," he writes; in other terms, they are different words for the same thing. It is agreed that repression is not a voluntary act.

Amnesia from repression may depend on one of three processes. There is an automatic operation of the super-ego, as in some neuroses which have their origin in earlier life. There is the operation of the ego itself. It appears that any experience with an emotional content such as to threaten self-preservation or some very valued function, such as seeing, may be unendurable, and the ego appears to protect itself by repressing the memory of the experience—that is, by failure to remember it. An example of this type of forgetting was furnished by a youthful murderer who, after recounting all the incidents of the murder, forgot the whole episode, including his own story about it, although he did not seek to escape responsibility but rather to shield his accomplice. It is this type of forgetting that some critics of the psycho-analytic theory of repression have exclusively attended to when they have asked the question, with its consequent answer: Are painful experiences really more apt to be forgotten than pleasurable ones? Wohlgemuth, for example, answered this question in the negative as the result of a questionary. But it is the quality of the pain and its association that are important. How is it painful, and why? Painfulness reaching the intensity that seems to threaten existence must be rare, hence type 2 is likely to be uncommon. But amnesia of type 1 depends for its occurrence on the quality of shamefulness, not of simple pain. Moreover, such a questionary as Wohlgemuth's ignores the important finding that it is not so often facts as fantasies that are forgotten by this method.

A third type of amnesia is the commonest in everyday life. It is the type which is based on the conflict of wishes, as, for example, in the forgetting of an appointment, where a kind of reciprocal inhibition is possible, and that wish usually wins which is more in accord with the egotistical interests.

Clinical Types

Clinical types of amnesia may be differentiated purely descriptively as (1) fragmentary, (2) localized or insular, and (3) total, and each of them may be retrograde or anterograde. By fragmentary I mean to denote the amnesia of progressive brain disease—for example, in senile dementia—where details of experience are forgotten long before the anterograde amnesia becomes generalized on the whole advancing front of what should be daily experience. This kind of amnesia does not depend so entirely on retention defect as is usually supposed, as the foregoing analysis may have shown. Interest and appetite, as well as the ability to schematize and extract, may all play a part before any associative or primary retention defects on a basis of neurotic decay sets in.

The insular and total amnesias are of chief clinical interest, both from the standpoint of differential diagnosis and for medico-legal reasons. The causal factors may be classified as: psychogenic—affective, hysterical, and simulated; and physiogenic—traumatic, etc. I have purposely distinguished an affective type of amnesia from a hysterical one. I believe it should be remembered that hysteria is a very distinct conception; the term should not be applied loosely to any gross disturbance of function which is evidently psychogenic. This is a frequent error. Affective amnesia occurs in accordance with the process described in type 2 above. For example, if an individual goes through the experience of an earthquake, and is subsequently found to be amnesic, I should classify his amnesia as affective. It would depend entirely on the emotional shock, and would be without discoverable motives other than to protect consciousness from painful memories.

Hysterical amnesia, properly so called, involves something very different from this. It means: (1) A concept of forgetfulness as a symptom, just as a patient may have a concept of paralysis or of anaesthesia. He would persuade himself and the onlookers that he could not remember, and this failure of memory would follow

certain lines, just as the anaesthesia would belong to the glove, or stocking, or mid-line patterns. Hence the particular characteristics of his amnesia would depend first on what he had heard or read, and secondly on the method by which he was examined. (2) Hysterical amnesia has a motive, but this may sometimes be far to seek, since it often depends on inner difficulties.

The third type of psychogenic amnesia, that due to simulation, is extremely difficult to differentiate clinically from hysterical amnesia. The reason for the difficulty is simple. Hysteria and simulation are the same thing from the symptomatic standpoint, but the reasons for their recurrence are of a vastly different order. In hysteria the patient simulates from inner needs. He knows he is simulating, but he does not know why, except that he may realize he wants sympathy. In simulation the patient does it to evade crude external difficulties of a contemporary kind of which he is perfectly aware. The inner needs of the hysteric, on the other hand, are narcissistic and infantile. His narcissisism gives him a tendency to self-display which readily utilizes dramatic possibilities. I suggest that all the grosser symptomatic manifestations of hysteria are the joint manufacture of the patient and the too credulous physician, and that the study of these gross symptoms has only served to obscure understanding of the underlying mental constitution.

An examination of the earlier history of adult hysterical patients tends to support this view. In a study of the so-called pre-morbid type of personality twenty-four patients who subsequently developed a gross hysterical reaction had been, by comparison with thirty-seven who developed a psychoneurotic anxiety state, as a rule much less energetic and in fact often sluggish and lazy. They had not only been shy and reserved, but apt to be negativistic, stubborn, counter-suggestible, and readily antagonized. But the most pronounced differences between them and those who displayed symptoms of the psychoneurotic anxiety type was the frequency with which the hysterics had exhibited anti-social reactions of a more pronounced variety, ranging from the holding of strong revolutionary political views with an obvious self-interest to a frankly persecuted attitude to society and even actual delinquency. Other characteristics of this type were inebriety, bad temper, untruthfulness, persistent quarrelling with the family, and a general lack of conscientiousness and of any sense of social responsibility.

The concept I am putting forward would correspond with the observation that multiple personalities are not apparently observed nowadays, nor are the phenomena observed by Charcot. Both of these facts support the contention that the gross symptomatic manifestations are artefacts, just as much as dermatitis can be when it occurs in such persons. It is true that after a time the patient may himself come to believe in the amnesia. As a patient of mine once said: "There is a moment of conscious acceptance of the neurosis." After that the patient believes more or less in his amnesia until someone with a strong conviction to the contrary persuades him to look again towards the memories from which he is turning away.

If hysterical and malingered amnesias are both consciously simulated, the former at least at first, they follow the patient's concept of what amnesia should be in both instances, and there will be no distinction between the two types. Any difference between hysterical and malingered amnesia will be individual, depending on the patient's experience, and not differing in any general way in its characteristics as between hysteria on the one hand and malingering on the other. I should regard as almost certainly malingered an amnesia arising without physical cause in a patient who is up against a well-known material difficulty—for example, an accusation of embezzlement.

Organic and Psychogenic Amnesia

The differential diagnosis between an organic and a psychogenic amnesia depends on the following.

1. The nature of the discoverable aetiological factor, whether it is of a psychological or a physical kind.

2. The type of the amnesia itself: (*a*) if it is associated with complete intellectual capacity from the beginning of the time it comes under observation it is psychogenic; (*b*) if it is arbitrarily selective, inconvenient events being forgotten, it is certainly psychogenic. For example, a woman accused of shoplifting remembered all the big stores she had visited that afternoon, but did not remember purloining anything.

3. The type of recovery: (*a*) if this is sudden and complete it is probably psychogenic; but (*b*) if it occurs by a gradual rolling up of the amnesia in an orderly fashion it is probably physiogenic.

4. The extent of the amnesia, so far as those of acute onset at any rate, are concerned. It has been observed by Ritchie Russell that the longest period for which the patient has subsequently a retrograde amnesia, when this occurs from a physical cause—for example, trauma to the head—has been seven days. Anything longer than that in the way of amnesia or sudden onset suggests a psychological origin.

It is perhaps not so well known that a post-epileptic amnesia may extend in a retrograde fashion far preceding in time the onset of any apparent epileptic state. I saw a patient recently who, after a major fit, forgot all the incidents of the previous week, when she had been carrying on her duties perfectly well as a school teacher. But a much more striking case has been reported by Stenman, who quotes five other patients who were mentally alert and intact during the space of time for which there was subsequent amnesia. In Strümpell's case the attack left a loss of memory for the preceding three months which was never recovered.

It is important to contrast this with instances in which definite disorder of consciousness exists, which is not apparent to the onlooker, for a period during which the patient has subsequently an amnesia but during which he may perform very complicated actions. It is sometimes disputed in a court of law whether complicated activity of the type which would pass as normal to the onlooker is possible during a state of disordered consciousness following a head injury. It is very interesting to quote the experience of C. E. Winterstein and Guttman, who have recently been investigating at Guy's Hospital the psychological and neurological state of professional boxers. They have collected a number of instances of amnesia in boxers following a knock-out. Some have remembered the sensations in the body after the punch. Others cannot remember having felt the punch but remember having seen it. Others do not remember anything of the punch. In these cases the knock-out was complete, and the boxer remained inactive until, after a short time, memory came back gradually.

There is a second group of patients in whom the amnesia extends in retrograde fashion from the time unconsciousness became complete. During the time which elapses between the receiving of the blow and the ultimate unconsciousness the boxer is apparently capable of behaving as if he were fully conscious. Cases are on record of boxers who have been allowed to fight on and who have, in some instances, won the fight. A heavy punch has been received earlier in the proceedings, but the boxer had no memory at all of the fight from the time when the punch was received.

There is one well-known boxer who, when 15 years old, was caught by a punch on the chin in the first round of a fight. He went down for a short count, but regained his memory under a cold shower. He had to find out carefully what had happened. He heard that he had fought like a tiger and won through a technical knock-out in the third round. Since the fight was won ultimately there would be—as Winterstein and Guttman point out—no motive for forgetting it.

The automatic activity of epilepsy with subsequent amnesia is celebrated, and is commonly reputed to be capable of reaching a high level, although the activity that takes place is held to be marked by impulsiveness and by lack of apparent purpose. This, if true, contrasts with the cases of boxers who proceed to win their fight—that is, they display a high degree of purposive activity while in a state of disturbed consciousness following the blow which ultimately produced amnesia. The importance of this observation suggests that in epilepsy also there may be purposive activity relating to the ordinary life, and that purposelessness is not an essential and indispensable mark of an act of automatism.

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CIRSOID ANEURYSM OF THE SCALP

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A study of textbooks shows that unanimity of opinion as regards the classification of scalp aneurysms has not yet been reached, while the aetiology of certain of these aneurysms has not definitely been settled. In a textbook published in 1900 the following statement appears:

"Aneurysms of the scalp—that is, cylindrical, spindle-shaped, or sacculated dilatations of arteries—are most common in the region of the temporal artery after injury of the same by a cut, stab, or contusion. These traumatic aneurysms result from a gradual yielding of the thrombus formed on the inner wall of the vessel at the seat of injury, and of the surrounding loose connective tissue from the impulse of the blood wave until finally a sac is formed, the wall of which consists of the outermost layers of the thrombus, the surrounding soft parts, and the newly formed connective tissue. In the case of non-traumatic or true aneurysms the artery gradually increases in circumference as a result of chronic endarteritis, which weakens the walls of the vessel to such an extent that they gradually yield to the blood pressure. In case the artery and corresponding vein are wounded simultaneously, an arterio-venous aneurysm may result—that is, a communication between the artery and vein is established, in some cases through an intervening sac. Owing to the communication between the artery and vein, marked disturbances in the circulation result, with pulsating dilatations of the arterial and venous branches. Almost all arterio-venous aneurysms result from injuries. Bramann states that among 159 cases there were only nine which began spontaneously. When spontaneous, there is at first a gradual dilatation of the artery from chronic endarteritis; the dilated sac then becomes adherent to the vein, and finally the aneurysm breaks through either into the open or already obliterated vein.

"Another form of aneurysm is the cirsoid aneurysm, in which a number of arteries and their capillaries become dilated, tortuous, and thickened. It usually develops from abnormal congenital conditions, and should really be classed among tumours. Less frequently it is acquired. At one time a distinction was made between cirsoid aneurysm and anastomotic aneurysm, the former being a diffuse dilatation of already existing arterial branches, with perhaps their capillaries and veins, while the latter was looked upon more as a tumour resulting from the new formation of dilated and elongated arterial branches. But these two forms frequently have transition stages, so that a discrimination cannot be made between them. The region of the ear and temples is a favourite place for cirsoid aneurysm. It seems to be common in women, in whom a tardy commencement of menstruation and frequent pregnancies are predisposing factors. The differential diagnosis between a cirsoid and an arterio-venous aneurysm is sometimes difficult."

The older surgeons had great experience in the diagnosis of aneurysm, but I should imagine that even to them "the differential diagnosis between a cirsoid and an arterio-venous aneurysm" must have been "somewhat difficult." In a textbook published in 1923[3] we read as follows:

"Plexiform angioma—this rare form of angioma was formerly known by the names 'cirsoid aneurysm' and 'aneurysm by anastomosis.' Although the vessels composing it are chiefly arterial, the veins and capillaries of the part may also partake in the production of the tumour, and thus the name 'arterial angioma,' which is sometimes applied to it, is not strictly accurate. The disease is most common in the scalp, especially in the distribution of the temporal and occipital arteries, and in the external ear. It consists of a mass of large, tortuous, intercommunicating, pulsating vessels, sometimes forming a mixed tumour extending over a considerable area. At the peripheral parts of the mass the normal arterial trunks are much enlarged, and can be traced into it. Accompanying the pulsation a loud bruit may be audible to the patient as well as to the observer. The whole tumour has a convoluted surface and a bluish colour; the overlying skin may also be naevoid, and in the scalp generally becomes hairless.

"Plexiform angioma usually develops gradually in young adults; it probably originates in a congenital naevus through an exaggerated formation of the enlarged and convoluted arterioles that sometimes form part of such a naevus. In other cases the disease has followed an injury."

This gives the impression that cirsoid aneurysm is usually a congenital condition. Yet in 1906[10] Berry had written: "It is well known that cirsoid aneurysm commonly develops after injury. It seems reasonable to believe that an injury involving both artery and vein would readily allow arterial blood to be transmitted to the interior of the vein. The increased pressure would naturally cause distension of the thin-walled veins, and a tumour composed of dilated and tortuous veins would be formed." Florence Sabin in 1913 showed, on the other hand, that the development of the capillary field afforded opportunities for communications between arterioles and venules to persist.

A study of the more modern textbooks and periodicals available in this Colony leave one with the impression that the elaborate classifications mentioned or outlined must be extremely confusing to the student. The subject is admirably summarized by Henry Searby[8] in the *Australian and New Zealand Journal of Surgery* (1931, i, No. 2). He writes:

"There thus appears to be considerable evidence that cirsoid aneurysm, racemose aneurysm, aneurysm by anastomosis, and pulsating angioma should be regarded as due to the same cause as arterio-venous aneurysm—that is, an abnormal communication between the arterial and venous systems—and, further, that such abnormal communication may be

developmental or traumatic in origin. Because this communication in cirsoid aneurysm is between veins and arteries which, although small, contain blood at a pressure which is high compared with that in the veins, the condition is progressive because the arterial blood in the thin-walled veins causes a progressive dilatation. In the case of so-called simple angioma, and of naevi, the difference in pressure between the immediate pre-capillary arterioles and the immediate post-capillary venules is so slight that the vein wall withstands, for the most part, the pressure, and a balance is arrived at, so that the condition remains stationary."

Treatment

As with all surgical conditions difficult of eradication, various forms of treatment have had their advocates through the years. As late as 1900, pressure treatment by pads and springs was being used, although it was admitted that the most certain cure was excision. How to attain this ideal? Extirpation after central and peripheral ligation of the main artery and all the branches leaving the aneurysm (Antyllus) had been tried and found wanting.

Excision of a small cirsoid was, of course, simple, but the larger aneurysms presented a difficult problem. Pressure on the afferent vessels while tying off the tumour on all sides with catgut ; ligation of the afferent artery—for example, the external carotid or each of its branches—and surrounding the tumour with multiple catgut ligatures passed through the skin and around the separate vessels ; ignipuncture—that is, punctate cauterization with the fine point of a Paquelin thermo-cautery or galvano-cautery, and injections of alcohol with a hypodermic syringe ; the employment of caustics and the injection of tincture of iodine, or of liquor ferri perchlor. ; all these had been tried and found wanting in the great majority of cases, and, in the case of injections, dangerous. Multiple incisions at different sittings, and ligaturing of the vessels met with, had little better results. Even tying of the common carotid had been tried—a dangerous method, which had been followed by softening of the brain from embolism or from thrombosis of the cerebral arteries.

As far back as 1887 Bryant[1] of New York had reported a case, quoted in *Operations of Surgery*, by Jacobson and Rowlands, 1907.

" The patient, aged 24, had a well-defined pulsating tumour at the site of a healed scalp wound in front of the left ear. The trunk and branches of the temporal and occipital were concerned in the growth. As this was rapidly increasing, the left external carotid was tied with catgut about half an inch above its origin. Tying the lingual artery also provided a branchless portion of the external carotid about an inch in extent. The ascending pharyngeal was sought for, but not found. All pulsation was at once checked, and the growth was also reduced to about one-third of its previous size. The operation was antiseptic throughout, and when the dressings were changed for the first time in ten days a slight return of pulsation was noticed in the tumour. A month after operation pulsation, thrill, and bruit were nearly as strong as before, and it was decided to attack the tumour itself in preference to tying the occipital and temporal branches, or the right external carotid. The arterial circulation was admirably controlled by surrounding the head with two strong rubber bands, beneath which compresses were placed at the points of where arteries passed to supply the scalp.

" Dr. Bryant found on record eight other cases of ligature of the external carotid for the cure of aneurysmal tumours of the face and head, and parotid gland, in two of which both vessels were tied simultaneously. This latter procedure is not reported to have been successful in either case. Of a total of nine cases, only one, a traumatic aneurysm of the parotid, was cured by ligature alone."

Jacobson and Rowlands remark :

" Thus it would appear that local remedies—namely, excision and under-running, aided by ligature of the chief feeding arteries—are most likely to be successful in this disease, which so often baffles treatment. Ligature of the external carotid on one or both sides will fail, owing to the free collateral circulation, if tried by itself, even in recent traumatic cases without much general dilatation of the vessels. If used at all, it should be as an adjunct and a preliminary step to diminish the vascularity of the tumour before this is dealt with locally by the methods above indicated."

In a recent edition of a well-known textbook[2] the statement appears :

" The condition may be treated by excision or electrolysis. In excision the haemorrhage is controlled by a temporary interlocking stitch around the affected area and by separate ligation of the feeding trunks. In large tumours the bleeding is formidable. In many cases electrolysis is to be preferred. The positive pole is placed in the centre of the tumour, while the negative is introduced into the main affluents one after another."

A. Kerr[3] describes a method of excision which he states " may be looked on as a combination of the usual way of dealing with tracks of ano-rectal fistulae and one of Matas's methods of endoaneurysmorrhaphy." He incises the aneurysm from the deep aspect after the scalp flap has been thrown down. It would appear that for over half a century little real advance was made in the treatment of this uncommon but distressing condition. Searby in 1931 and Kerr in 1933 described methods which promise to be successful even in extensive cirsoid aneurysms. Curiously enough Kerr does not mention Searby's article. The methods appear to me rather similar, but of the two I consider Searby's the safer and of greater ease in application.

Report of a Case

The following are the notes of a case eventually treated in this hospital successfully by the method described by Searby.

An East Indian woman, aged about 25, was admitted on April 26th, 1932, by a doctor who wrote that " the pulsating haematoma of the scalp " had followed an injury from a falling piece of wood some weeks before. Examination showed a pulsatile swelling in the region of supply of the superficial temporal artery, and continuing backwards into the field of the occipital. It extended upwards almost to the middle line, and forwards to an inch from the line of the hairy scalp. A bruit was audible over it. The patient complained of singing and buzzing noises in the head and of severe headaches ; she begged for operation—a sign that she was in great suffering, for East Indians postpone the use of the scalpel as long as possible. There was no scalp wound and no scar. The skin over the swelling was not naevoid. She had a moderate degree of hookworm anaemia, and had roundworm ova in the stools.

First Operation.—Electrolysis was tried at four sittings, using a method described in the manual of Thompson, Miles, and Wilkie ; little effect resulted. It has to be admitted that our apparatus was home-made and our experience of electrolysis in large blood tumours was not great.

Second Operation.—Ligature of the superficial temporal and branches of occipital was undertaken under local anaesthesia. Pulsation was felt to cease almost throughout the tumour on May 26th.

Third Operation.—On June 5th pulsation was almost as free as ever. Under local anaesthesia feeding vessels which could be felt were under-run with catgut through the skin ; the pulsation was appreciably lessened. The patient felt so well that she demanded discharge, with the promise to return if symptoms returned. She was accordingly discharged on June 17th. She was shown at a meeting of the local Branch of the British Medical Association two weeks later ; the tumour and pulsation were still appreciable, but the tumour was only about half its original size. Soon after the meeting I read

Searby's article on cirsoid aneurysm, and lamented its late receipt.

Fourth Operation.—She was readmitted on November 23rd, 1933, with return of the noises and "feeling of rushing water" in the head, accompanied by severe attacks of headache. The tumour had almost regained its original size, with free pulsation. She readily consented to operation despite the previous failures. The operation was divided into two stages, as advised by Searby, the first being performed on November 27th under chloroform and ether. (Intratracheal ether administration is advisable with the head elevated, but we do not have the apparatus in this Colony.) The scalp was shaved before the operation, great care being taken to protect the tumour from accidental incision. Iodine sterilization was employed. A stout rubber tube was applied round the skull, well down over the occiput posteriorly, including the ears at the sides so as to help the "grip," and above the supra-orbital margins anteriorly. Small rolls of used glove rubber were inserted beneath this tourniquet where the larger vessels could be felt pulsating. The tourniquet also held in place a double layer of sterile gauze soaked in rectified spirit. The incision was made through the gauze with a sharp scalpel just beyond the visible margin of the aneurysm; it extended almost to the midline above, and tapered to a width of almost three inches in the region of the auricle. Digital pressure by assistants controlled the bleeding on the central side, while the scalp flap, which included the aponeurosis, was rapidly thrown down and a gastro-enterostomy clamp was run across its base; fairly free haemorrhage occurred, despite the tourniquet, until the clamp was in position.

As the flap was being thrown down several vessels passing from it into the bone bled freely, and were tied off with fine catgut. The bone showed commencing erosion by the aneurysm. Forceps were now applied to the aponeurosis as the assistants finger by finger released pressure, and individual vessels were picked up and tied off with catgut—a procedure taking some time; several vessels had to be underrun. (Searby uses silk, but I have found catgut reliable in scalp operations.) The vessels in the aneurysm flap were tied in like manner, and the clamp was removed. The vessels in the aneurysm could be plainly seen from the under aspect of the flap; they "had a diameter about that of an ordinary lead pencil, and were packed very closely together." All haemorrhage having been controlled, with the tourniquet off, several layers of gauze were taken from a bowl of normal saline at blood heat, lightly squeezed, and inserted between the scalp flap and the bone. Sterile gauze was placed over the flap, covered with a light layer of wool, and a firm bandage was applied. No sutures were used to hold the flap in position. A gum saline injection was administered, as a good deal of blood was lost and the patient had been in a debilitated state. A blood donor who stood by was not required.

FIG. 1.

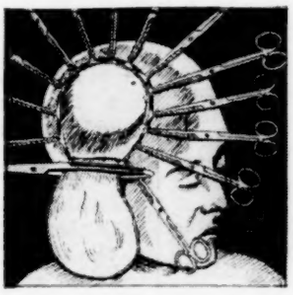

FIG. 2.

FIG. 3.

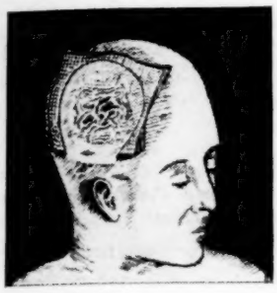

FIG. 4.

FIG. 5.

FIG. 6.

FIG. 1.—Before operation; the aneurysm actually extended further towards the midline. Scars of first operation are visible.

FIG. 2.—Flap thrown down after incision down to bone; clamp at base to control haemorrhage until vessels at edge of flap are tied off; forceps controlling haemorrhage in main scalp.

FIG. 3.—Vessels tied off, haemostasis satisfactory.

FIG. 4.—Saline-soaked gauze pads inserted between flap and bone.

FIG. 5.—Ninety-six hours later; gauze removed and oedematous flap under-surface exposed, showing the thrombosed aneurysm; the thrombosed tissue is easily stripped from the skin, and the vessels tied off at the flap pedicle beyond which thrombosis has not extended.

FIG. 6.—Thrombosed tissue stripped; under-running vessels in pedicle beyond which thrombosis has not extended.

FIG. 7. — Photograph of healing wound on tenth day, after final operation.

The second stage was performed ninety-six hours later. (Searby allowed an interval of seventy-two hours, but stated that he thought ninety-six hours would have been better.) Under general anaesthesia the dressings were removed. The flap was found to be oedematous but healthy, except at the edges, which showed a greenish-black colour as if decomposition was setting in; the odour was not marked. Stripping of the subcutaneous layer and aponeurosis from the skin was found to be easy. The stripped tissue included the thrombosed vessels of the aneurysm. At the base of the flap the vessels were not thrombosed, and were easily isolated and tied off with chromic gut. The thrombosed tissue was thus easily cut away with very little bleeding. The flap edges were cut round and so freshened. The flap was then replaced and anchored by silkworm-gut stitches. Rubber glove drains were inserted at the pedicle, dressings were applied, and the head was firmly bandaged.

Healing followed by first intention, except where the drains had been inserted. (The use of these could, I think, be safely abandoned.) The patient complained of the head

being "sore" for three days, but the old headaches did not recur. She was discharged in two weeks, feeling very well and with no sign of tumour or pulsation.

Summary

1. The aetiology of cirsoid aneurysm of the scalp does not appear to have been definitely settled.

2. A theory attractive to the practical surgeon is that cirsoid aneurysm, racemose aneurysm, the aneurysm of anastomosis, and the pulsating angioma are due, as is arterio-venous aneurysm, to an abnormal communication between the arterial and venous systems, and that such communication may be either developmental or traumatic in origin.

3. Even large cirsoid aneurysms of the scalp may be extirpated by a method which depends for its success on the easy stripping of thrombosed and oedematous tissue, including the aneurysm, from the skin layer of the scalp flap.

4. Despite the fact that the vascular layer is stripped from the flap with the aneurysm, the skin flap receives sufficient nourishment, and very little sloughing takes place even with a large flap.

5. In the case described the whole aneurysm was excised. Searby, dealing with a larger aneurysm, excised only two-thirds of it, and the results were excellent, because the abnormal communication between the arterial and venous systems was abolished.

6. An interval of ninety-six hours between the two stages of the operation should not be exceeded, as necrosis of the flap edges might occur. An interval of seventy-two hours may not allow such easy stripping of the aponeurosis and thrombosed tissue from the skin flap. Probably an interval of eighty-four hours would be ideal.

7. The operation should not be a formidable one in practised hands, despite the vascularity of the scalp; haemorrhage will naturally be greater and the operation time will be longer if aneurysmal tissue has to be cut through.

8. It is unlikely that quinine and urethane injections, as have been lately used in the treatment of naevus, would be successful in the treatment of extensive pulsating tumours.

I am indebted to Dr. A. H. B. Pearce, chief medical officer of the Colony, for permission to publish this article.

The illustrations are by Alohihakau Eva, a student of the Central Native Medical School, Suva, Colony of Fiji.

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G. Murano (*La Pediatria*, June 1st, 1936, p. 521) records the case of a male infant, aged 18 months, who nine days after the onset of varicella developed a tremor in the right lower limb which rapidly became generalized. An intense horizontal nystagmus was also noted together with general muscular hypertonus and a slight exaggeration of the tendon reflexes. The cerebro-spinal fluid was normal. The nervous symptoms disappeared in twenty-five days, but about a fortnight later the child developed broncho-pneumonia, and died after a week's illness. There was no necropsy. A history of repeated abortions in the maternal grandmother, the mental deficiency of the father, and the retarded psychical development and positive Wassermann reaction in the child are constitutional factors which may have reduced the child's resistance.

BLOOD TRANSFUSION

A REPORT OF SIX FATALITIES

BY

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ASSISTANT PHYSICIAN TO CHARING CROSS HOSPITAL

This is a report of six fatalities following blood transfusion. Five of them occurred from heart failure, although ordinary precautions had been taken in the preliminary tests and in the performance of the operation. Death occurred, often with pulmonary oedema, but without evidence of haemolysis, from thirty minutes to nineteen hours after transfusion. These five cases form a group of which only few isolated examples have been reported; this, however, does not appear to be a true index of their incidence, for they were collected within a period of two and a half years at one hospital. Only two of these five were personally observed; in each of the other cases the notes were amplified by personal communication with the operators concerned.

The sixth case was clearly the result of incorrect grouping; haemolysis was evident, and death occurred from uraemia four days later. None of the cases was *in extremis* before transfusion; they can all, therefore, be fairly described as transfusion fatalities. A careful post-mortem examination was made in each case, and I am indebted to the late Professor Donaldson for reporting on the histological appearances.

Case I

Addison's Anaemia: Transfusion: Pulmonary Oedema: Death in Ten Hours

A woman aged 60 had had three operations many years previously for a pelvic condition. She was admitted to a surgical ward with a story of having had epigastric pain and vomiting and loss of weight for three years, and with weakness and dizziness of six months' duration. A test meal showed achlorhydria, and two *x*-ray examinations suggested a carcinoma of the pylorus; haematoporphyrin was present in the faeces. The haemoglobin was 30 per cent., but no further blood count was made. Laparotomy was decided upon.

The patient belonged to Group IV, and 300 c.cm. of blood from a relative (also Group IV) were given by the citrate method at 6.30 p.m. The patient's serum was tested against whole blood of the donor and no agglutination appeared. Shortly after completion of the operation she experienced a sense of fullness in the throat and shivered slightly. At 8 p.m. the pulse rose to 140 and the temperature to 100° F.; pulmonary oedema developed. Later, adrenaline and atropine were given; the patient became comatose and died at 5 a.m., ten hours after the transfusion.

Post-mortem Examination.—The stomach was normal; no carcinoma. The bases of the lungs were congested and oedematous; there was excess of frothy secretion in the trachea and bronchi. The heart showed excess of fat over the surface; the muscle was soft, and the right side was dilated. The liver was soft and deeply congested. The bone marrow of the humerus was deep red. The spleen was slightly enlarged and very deep red. The kidneys were normal and the arteries healthy. The urine was clear. The histological examination was as follows: Perles' reaction showed much iron in the liver, spleen, and kidneys; in the last-named there was slight cloudy swelling only. The spleen sinusoids were engorged with blood; normoblasts and megaloblasts were present, and a fairly large number of eosinophils. Iron was present in the central parts of the liver lobules, but there was no marked fatty change. There were focal reticulo-endothelial cell collections in the cardiac muscle, but no fibrosis and no fatty degeneration. The bone marrow showed a well-marked normoblastic and megaloblastic reaction; many eosinophils were seen.

Case II

Carcinoma Ventriculi : Moderate Anaemia : Transfusion : Death in Nineteen Hours

A man aged 62 was treated in hospital from May until October, 1929, for a chronic gastric ulcer with relief. In December, 1930, he was treated again, and returned to work with some occasional pain. In April, 1931, owing to persistence of the symptoms and a radiological filling defect, carcinoma was diagnosed. He was admitted on April 16th, 1931, following a haematemesis. His recovery from this was unsatisfactory ; pain persisted, and occult blood was always present. A test meal showed complete achlorhydria and considerable delay in emptying. The haemoglobin figure was 40 per cent.

A transfusion was performed on May 11th with a view to operation. The donor, a relative, and the recipient were grouped and cross-grouped, and 600 c.cm. of blood were given by the citrate method at 10 a.m. There was no reaction until 1 p.m., when there was shivering and the pulse rose to 140. Adrenaline was given. At 5 p.m. the pulse was weaker, and cardiac stimulants, including strophanthin subcutaneously, were given. At 8 p.m. there was definite improvement, the pulse being 100. At 5 a.m. the next day the breathing suddenly became shallow and the pulse feeble ; the patient died in fifteen minutes, nineteen hours after the transfusion.

Post-mortem Examination.—The stomach contained two pints of altered blood ; there was a large neoplasm at the pylorus, five inches long, with metastases in the glands. The liver was pale, but there were no secondary deposits. The kidneys were congested, the urine was clear, and the spleen was small. The lungs were emphysematous. The heart showed slight hypertrophy of the left ventricle ; the muscle was pale, but there was no fibrosis. The histological examination of the stomach revealed a spheroidal-celled carcinoma. The kidneys were healthy, apart from slight congestion. In the spleen the Malpighian bodies were small, and there were no hyaline changes. The erythrocytes were well defined ; a small amount of iron was present, and there were more eosinophils than usual.

Case III

Multiple Telangiectases : Severe Anaemia : Transfusion : Death Four Hours Later

A man aged 72 had been anaemic for three years. He had telangiectases on the nose and cheeks which used to bleed some years previously whenever he shaved, so that he now grew a beard. At no time did these bleed very much, and he had never had epistaxes. His brother had similar spots on his nose which bled, but there was no history of epistaxis in the family. In November, 1932, the patient was very pale, with a haemoglobin figure of 20 per cent. The tongue was normal, the spleen was not palpable, there were no retinal haemorrhages, and the blood film did not correspond with the picture of Addison's anaemia.

The patient was grouped and cross-grouped, and a blood transfusion of 300 c.cm. was performed by the citrate method. There were no untoward symptoms during the operation, but two hours later he experienced a dull pain behind the sternum and some shivering. He suddenly became worse, developed air hunger with marked collapse, and died four hours after the transfusion.

Post-mortem Examination.—Telangiectases were present round both eyes and in the mouth. The lungs were emphysematous, but otherwise normal ; the trachea contained a little blood-stained mucus. The right side of the heart was dilated. The liver showed mottled, congested lobules, and a small cyst containing caseous material. The spleen was a little enlarged, firm, and congested. The kidney had a narrow cortex, with arteriosclerotic vessels. Histological examination showed the kidney to be congested ; the erythrocytes were well formed and normal. In the spleen there were small Malpighian bodies, with much hyaline degeneration of the arterioles, and more iron than in the other cases. Very little blood was seen ; many doubtfully granular cells were noted in groups, some of which showed active mitosis. The bone marrow contained many polymorphs, myelocytes, eosinophils, megakaryocytes, and nucleated red cells—certainly not aplastic.

Case IV

Haemolytic Anaemia, Mitral Stenosis : Transfusion : Pulmonary Oedema : Death in Two Hours

A woman, 26 years old, had had rheumatic fever at the age of 17 ; she had since been quite well up to the birth of her only child eighteen months before admission. Although it was a normal confinement she did not seem to pick up after it. She was left with shortness of breath, a sharp pain in the left shoulder, and dizziness on exertion, with a cough and a feeling of tiredness. Twelve months before admission she had weaned her child and taken a long holiday ; after this she felt much better for three months, when the symptoms returned and gradually became worse up to the time of her admission.

On examination the patient was very pale and slightly jaundiced, and her legs were oedematous. The urine contained bile salts and pigments, but the stools were normal in colour. The heart was slightly enlarged, and there was evidence of mitral stenosis. The spleen was palpable three inches below the costal margin, but the liver was not felt. Respiration was rather embarrassed, even at rest, and the temperature was slightly raised. A blood count showed: red blood cells, 2,480,600 per c.mm. ; haemoglobin, 35 per cent. ; colour index, 0.7 ; white cells, 9,800 per c.mm.; anisocytosis and polychromasia were well marked. The reticulocytes numbered 19.5 per cent. The resistance of unwashed cells was 0.475/0.4. Three weeks later the resistance of washed red cells was 0.55/0.45—a slight increase in fragility. The direct van den Bergh reaction was a slight immediate positive and the indirect was positive, 1 unit. A test meal showed achlorhydria, with pepsin absent. The electrocardiogram showed " some right ventricular preponderance suggesting mitral stenosis. The slight indenting of ventricular complexes shows some myocardial disease as well."

A diagnosis of mitral stenosis with a haemolytic anaemia of obscure origin was made. After three weeks' treatment with liver and large doses of iron there was no improvement in the anaemia, although the oedema and dyspnoea had disappeared ; a blood transfusion was therefore advised with a view to splenectomy at a later date.

The patient was a Group II case and the donor a Group II. The serum of the patient was tested against the whole blood of the donor with no agglutination ; 600 c.cm. of blood were given slowly by the citrate method. During the transfusion the patient developed a mild dry cough, and immediately afterwards she felt sick. Forty-five minutes later she collapsed, and was grey in colour. Adrenaline, 5 minims, and an hour later morphine, 1/4 grain, with atropine, 1/50 grain, were given because of pulmonary oedema, but the patient died two hours after completion of the transfusion.

Post-mortem examination of the lungs revealed some recent pleurisy on the right side, with subpleural petechial haemorrhages in the main fissures. They were bulky and failed to collapse on removal ; deeply engorged and oedematous. The smaller bronchi were clearly dilated, and contained mucopus. The trachea was full of frothy fluid, and there was marked soft enlargement of the bronchial glands. The heart showed dilatation and hypertrophy of both auricles and the right ventricle ; the mitral valve was stenosed, and admitted the tip of one finger only. The liver was very firm and congested, and somewhat nodular near the free margin ; it was normal in size. The pancreas was normal. The spleen weighed 1,550 grams ; there were recent patches of perisplenitis. It was very red and firm, and the Malpighian bodies showed up distinctly. The kidneys were firm and the pyramids purple. The bone marrow of the humerus was dark red. The pathologist's summary was: " Mitral stenosis followed by chronic bronchitis and congestion of liver and fibrosis of this organ. Also evidence of haemolytic anaemia, precise nature unknown. Death due to acute oedema of lungs resulting from blood transfusion."

Histological examination of the kidneys showed no haemoglobin plugs ; these organs were not unduly congested, and were healthy. The spleen was very congested. The Malpighian bodies were well marked, the pulp was full of erythrocytes, and there were no hyaline changes. The marrow showed a well-marked normoblastic and myelocytic reaction, a greater normoblastic reaction than in Case VI. The liver was moderately congested ; areas of focal necrosis were

chiefly peripheral. There were groups of leucocytes round the bile ducts. No true cirrhosis was present, but possibly early periportal fibrosis.

Case V

Chronic Empyema: Second Transfusion from Same Donor: Death in Half an Hour

A boy aged 18 had had a rib resection for drainage of an empyema following pneumonia in 1922. In 1924 this was drained again. In January, 1930, he was readmitted with pain at the site of the discharging sinus, fever, and a persistently high pulse rate. At an operation on January 14th portions of the third to the eighth ribs were resected. The fever continued and, since the haemoglobin was 40 per cent. on February 14th, the first transfusion of 360 c.cm. was given after careful grouping and cross-matching. A mild febrile reaction without haemoglobinuria or jaundice followed. On February 28th a second thoracoplasty was performed. On March 2nd a second transfusion was given, using the same donor, the patient's brother, without any further tests being done; 270 c.cm. of citrated blood had been run in when the patient complained of backache, his breathing became stertorous, there was cyanosis, and the sphincters were relaxed. From this he rallied, but suddenly collapsed while talking, and died thirty minutes after the completion of the transfusion.

Post-mortem Examination.—Marked scoliosis was present, and, on the right side, a sinus led to an abscess cavity under the fourth rib. The blood was fluid, and there was no post-mortem clotting. The right pleura was very thick and fibrous, and the right lung bronchiectatic and collapsed. The left lung was emphysematous and oedematous. The heart muscle was pale and the liver pale and flabby. The spleen was twice the normal size, soft, and congested. Histological examination of this organ revealed small Malpighian bodies; one or two vessels showed hyaline changes. There were many polymorphs and eosinophils, more so than in the section of Case II; there was some congestion, but no iron. The kidneys were healthy but congested; rather more polymorphs were present than usual, but no iron was seen.

Case VI

Oesophageal Ulcer, Secondary Anaemia: Five Previous Transfusions: Haemolytic Reaction: Death Four Days Later from Uraemia

A woman, 33 years old, swallowed a piece of pineapple in 1914 which seemed to stick in her throat. After this she had frequent attacks of pain on swallowing until, in 1926, oesophagoscopy revealed an ulcer one inch above the diaphragm. Despite two months' rest and light diet this did not heal, so a gastrostomy was performed in 1927, and deep *x*-ray therapy was given. In February, 1928, two transfusions were performed for anaemia, and she was then able to work for nine months. In 1929 a third transfusion was given. In June, 1930, the gastrostomy was closed, the haemoglobin at this time being 36 per cent. Owing to recurrence of the dysphagia and symptoms of anaemia, the patient was readmitted in January, 1931. The blood count showed: red blood cells, 2,327,000 per c.mm.; haemoglobin, 29 per cent.; colour index, 0.64; and white cells, 5,000 per c.mm. On January 22nd, 1931, she received a fourth transfusion of 360 c.cm. of Group IV blood. Five days later she had a fifth transfusion of 510 c.cm. of blood, which was followed by a fairly severe reaction, the temperature being 102° F. and the pulse 100. On February 2nd the haemoglobin was 36 per cent. By the usual tests the patient was, on February 9th, considered to belong to Group I; 540 c.cm. of citrated blood of Group I was therefore given. During the transfusion there were no untoward symptoms. Fifteen minutes later there was a sharp reaction with a rigor and high temperature and pulse rate. The next day deep jaundice appeared, the temperature being 104° F. and the pulse rate 107. The patient complained of pain and tenderness all over the body and of feeling very ill. On the second day after the transfusion the jaundice was deeper; there was complete anorexia with constipation and anuria. The temperature was 98° F. and the pulse rate 100. She vomited three ounces. On the third day she was much worse and weaker; no food was taken, and the pains increased. Chvostek's sign was positive, but there was no twitching. Intramuscular calcium was given without effect. On the fourth day the patient became comatose and died. Two ounces of urine were excreted just before death, but there is no record of this having been tested. Intensive alkali therapy, as advised by Osman, was not started until two days after the onset of anuria.

Post-mortem Examination.—A healed ulcer at the lower end of the oesophagus was found. Both pulmonary bases were congested and oedematous. The heart was normal. The liver was not enlarged, but it was soft and fatty. The spleen was twice the normal size. The two kidneys weighed 480 grams; they were soft, pale, and flabby. The Prussian blue reaction was negative. The histological examination showed many renal tubules blocked with "haemoglobin" and debris of "degenerated red cells"; the microscopical Perles reaction was negative. The spleen contained small Malpighian bodies; the sinuses were not distended; there were many erythrocytes well formed in the pulp; a few polymorphs; no hyaline changes; and no iron. The liver sinusoids were well filled; there were slight back-pressure changes, but no iron was seen. The marrow contained numerous megakaryocytes, myelocytes, and normoblasts—a normoblastic reaction. The heart muscle cells were rather thin; there was no fibrosis, but a slight increase of brown pigment.

Discussion

The various types of transfusion reaction have been discussed elsewhere.[13] There are two main types: the common febrile reaction, which is also known as the delayed or "anaphylactic" or proteolytic reaction, and the haemolytic reaction due to faulty grouping. The latter takes two forms: the immediate and the late, or uraemic reaction.

The common febrile reaction[13] is probably caused by the introduction of foreign protein in the form of old blood clot, of bacteria contaminating solutions, or of incipient coagulative changes in the donor's blood, governed somewhat by the time taken to run the blood into the patient's vein, and its temperature. This conclusion is based on the similarity of the clinical picture to that of reactions caused by intravenous serum therapy, and the fact that reactions are more common in recipients sensitized by previous transfusions or possessing an allergic taint.[14] That citrate plays an important part in causing reactions is disproved by Meleney,[10] and Lewisohn and Rosenthal.[9]

Cases I to V in this paper fall into the category of reactions of this type. Approximately 50 per cent. of transfusions are followed by such reactions of varying intensity, and yet only a very small percentage of them are fatal.

The first three patients died from heart failure. They were all the subjects of long-standing anaemias, so that presumably the heart muscle in each case was functionally weak, although at necropsy there was little evidence of organic change. In Case I, suffering from pernicious anaemia, pulmonary oedema indicated a left-sided heart failure. The next two patients died from syncope. Case II was complicated by the presence of a neoplasm of the stomach, although there was no marked cachexia. In Case III, with anaemia secondary to bleeding from telangiectases, there were the additional factors of arteriosclerosis and old age. In each case the reaction started at least half an hour after the completion of the operation. It is this interval which helps to differentiate this type from the immediate reaction due to faulty grouping, when symptoms usually come on after only 100 c.cm. of blood have been given.[12]

There is no reason to think that blood of the wrong group had been used in view of the double testing beforehand, the absence of symptoms during the operation, and in particular the absence of backache and the fact that the urine in the bladder in Case I was clear at

necropsy. Carrington and Lee[5] report an identical case in which the venous blood was carefully tested for agglutination and haemolysis just before death, also the urine for red cells and haemoglobin, with negative results. Brines[4] also records a similar case with a post-operative infection, in which the reaction started half an hour after the transfusion, and death followed ten hours later with pulmonary oedema.

Case IV was a particularly bad risk for blood transfusion, but the explanation of this fatality is essentially the same as that in Cases I to III. There were obvious signs of circulatory failure three weeks before transfusion, due to mitral stenosis and severe haemolytic anaemia; these signs, however, had subsided with rest. During the course of the transfusion of 600 c.cm. of blood the dry cough should probably have been interpreted as an early sign of pulmonary oedema due to heart failure, and the operation stopped accordingly.

Two similar examples of fatalities from blood transfusion in cases of valvular disease of the heart are recorded, one by Beisenberger[2] and the other in the discussion following a paper by Kordenat and Smithies.[7] The presence of haemolytic anaemia in Case IV may have been an additional factor in causing death. Dawson[6] stresses the danger of transfusion in cases of acholuric jaundice, and Payne[11] reports a fatality in a case of acute haemolytic anaemia of Lederer. In Payne's case, however, death took place four days after the operation with suppression of urine.

In Case V the patient was severely ill as a result of septic absorption from a chronic empyema and of two thoracoplastic operations, yet a mild febrile reaction following the first transfusion did not upset him. Fourteen days later, without further preliminary tests, the same donor was used for a second transfusion. When 270 c.cm. of blood had been run into his vein symptoms developed which led to his death half an hour later. One must assume that as a result of the first transfusion the recipient had become sensitized to this donor's blood. It is to be noted that in this case there was no delay in the onset of symptoms as in the first four cases.

Thalhimer,[16] Levine and Segal,[8] Astrowe,[1] and Smith and Haman[15] record very severe reactions after second transfusions from the same donor. The majority of them were haemolytic in character, but the patients all recovered. In none of these was the cross-agglutination test performed on the second occasion. Traum[17] described three such cases of severe anaphylactic shock which recovered without showing haemolysis. In one case there was an interval of eighteen months between the two transfusions. He is so impressed with this danger that he advises that a donor should not on any account be used a second time for the same patient, even if the cross-matching shows no incompatibility.

The sixth case is an example of a typical haemolytic reaction following transfusion of blood of the wrong group. Jaundice and suppression of urine occurred, and the kidneys gave the usual finding of brown pigmented debris in the tubules. This patient had had five previous transfusions from Group IV donors, but on the sixth occasion, owing to an error, he was given blood from a Group I donor. It is now known that the blood group of an adult never changes (Polayes and Lederer),[14] although, as a result of sensitization or other cause, the titre of agglutinins in the serum may be raised sufficiently to interfere with the preliminary tests. Several such haemolytic reactions[3] are recorded resulting in death from uraemia four to twelve days after the transfusion, and the clinical picture contrasts strongly with that in Cases I to V reported above.

Attention must be drawn to our ignorance in regard to the renal changes in such cases. It is ordinarily assumed that the brown pigment in the tubules is a precipitated breakdown product of haemoglobin, which has been liberated from the haemolysed donor's cells. So far as I know the nature of this pigmented debris has never been ascertained. That it does not consist of free iron is shown by the negative Prussian blue reaction in Case VI above and in Bordley's[3] third case. This, of course, does not disprove its origin from haemoglobin.

Witts[18] and Bordley[3] record cases showing uraemia and the characteristic renal changes associated with transfusion deaths in which there had been no jaundice or other evidence of haemolysis during life. It therefore appears improbable that such deaths can invariably be explained as the result of haemolytic changes.

Conclusion

It is the object of this paper to illustrate and stress some of the transfusion risks which are dependent upon the general condition of the recipients, quite apart from the question of faulty grouping. Except possibly for Case IV, none of Cases I to V would ordinarily have been considered to be unsuitable for blood transfusion; nevertheless they all died as a direct result of this procedure. With all ordinary precautions of grouping and selection of cases the operation of blood transfusion carries with it a risk which indicates that it has to be used with considerable discretion in a number of conditions.

Summary

1. Four cases of heart failure secondary to ordinary transfusion reactions are reported, illustrating some of the dangers of transfusion, quite apart from the question of faulty grouping.

2. These fatalities occurred in patients with long-standing anaemia or with heart disease.

3. The danger of using the same donor for a second transfusion is illustrated by one fatality (Case V) and reference to serious reactions recorded by other authors.

4. A haemolytic reaction (Case VI) is reported ending in death from uraemia. The clinical picture is in striking contrast with that in the other five cases.

5. Doubt is cast on the accepted theory of haemoglobin plugging of the tubules in all cases of uraemia following transfusion.

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Dr. Frederick H. Albee, the well-known surgeon of New York, during a recent trip through South America received the following honours from different countries: honorary presidency of the Brazilian Society of Orthopaedic Surgery and Traumatology; honorary professorship of surgery, San Marcos University, Lima, Peru; and membership of the Faculty of Medicine, University of Chile.

OESTRIN AND PROGESTIN IN SECONDARY AMENORRHOEA

BY

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In 1933 Kaufmann[1,2] described his treatment of forty cases of amenorrhoea, in all of which three normal periods had followed injections of oestrin and progestin. The technique he adopted was to give 250,000 international units of oestrin every three days for five doses, followed by three days' rest, and then thirty-five rabbit units of progestin distributed over five consecutive days, the total amount of oestrin for a course of treatment being one and a quarter million international units, or 50,000 rat units.

If too much oestrin was used Kaufmann found that cystic hyperplasia of the endometrium resulted, this condition being analogous to that found in metropathia haemorrhagica, but it required the administration of over five million international units before this happened.

A rat unit is equivalent to five mouse units and to twenty-five international units, and is described as the minimum quantity of ketahydroxy-oestrin required to produce a cell picture of oestrus in the vaginal smear of ovariectomized rats ; 50,000 international units are equivalent to 1 mg. of the dihydro-oestrin ; and 26.7 mg. of the crystalline benzoate are needed to produce a single period. The dihydro-oestrin is five times the strength of the ketohydroxy-oestrin.

By this technique Kaufmann was able not only to cure secondary amenorrhoea but also to produce the normal physiological changes in the endometrium of a castrated woman. In cases where the amenorrhoea was due to hypoplasia of the genitalia, heavier doses of oestrin were necessary, and in one case he recorded that over eight and a half million units were given in six months without any demonstrable result. When the dose was increased to one million units weekly the growth started, and after a few weeks the uterus was the size of a normal woman's.

Bishop, Cook, and Hampson[3] at Guy's Hospital, using a similar technique, reported almost identical results. Their *modus operandi* differed but slightly in that they gave their injections of 250,000 international units on the first, fourth, eighth, eleventh, and fifteenth days, but on the nineteenth, twentieth, twenty-first, twenty-second, and twenty-third days they gave only one rabbit unit of progestin as compared with the seven units given by Kaufmann. This latter figure they considered to be too much, and as they have obtained comparable results using one-seventh of the dose they are presumably right.

American Results

The whole question of dosage is of great importance, and there seems to be a considerable variation in the estimates of different authors. The only serious attempt to discover the relation of oestrin administered to clinical result obtained was made in America by Werner and Collier.[4] They found that injections of theelin in castrated young women whose uteri were intact produced endometrial hyperplasia, with uterine bleeding in some cases, and activity of the breasts and alleviation of the subjective symptoms in all cases. Moreover, the libido was increased in four out of five patients, and those in whom no uterine bleeding occurred had the usual psychical phenomena and discomforts which accompany the menses. These observations were the result of random injections of theelin, and in order to estimate the correct dosage necessary to duplicate these results Werner and Collier did the following experiment.

They selected eight women who had been castrated but whose uteri were intact. All had atrophic breast changes, markedly decreased or absent vaginal mucous secretion, and all complained of the usual castration symptoms. Four curettings were done on each patient ; the first, before the injections were started, and then one at the end of every twenty-eight-day period for three months. All the patients were treated for thirteen weeks, and the doses of theelin varied from massive doses down to 100 rat units every other day. Consistent changes were noted in the breasts, cervix, and endometrium. All the patients experienced activity in the breasts, especially when uterine bleeding appeared, or at the times when they had the feeling that menstruation would occur. These changes were constant and increasingly prominent throughout the duration of treatment. At the end of twenty-eight days, when the second curetting was done, there was present in all cases congestion of the cervix characterized by a purplish-red enlargement and increased vascularity. At the third curetting, which was performed at the end of fifty-six days' treatment, there was noted a definite increase in the thickness of the endometrium. This thickness was roughly proportional to the amount of theelin administered, while those patients who had had the massive doses were found to have an atypical endometrium with complex glands with intrapapillary processes, and a great increase in the stroma where there was congestion of the vessels. The fourth curetting showed similar but exaggerated results in all patients.

Werner and Collier deduced from these results that the degree of endometrial growth was directly proportional to the duration of administration and to the size of dose. Thus one patient showed endometrial growth at the end of twenty-eight days as a result of having had 2,800 rat units of theelin. Another patient first showed growth at the end of fifty-six days, at which time she also had had 2,800 rat units administered, so that that figure would appear to be the minimum clinical dose. Kaufmann and the Guy's observers had used one and a quarter million international units, or 50,000 rat units, for their experiments, but the end-points were very dissimilar—Werner and Collier had the progress controlled by endometrial scrapings, Kaufmann by true menstrual bleeding. Werner and Collier, however, had not tried to produce menstruation as they had not followed up the theelin by corpus luteum extract ; but since they definitely stated that they obtained endometrial growth after only 2,800 rat units, or 75,000 international units of theelin, it seemed to me that a dose of oestrin between 75,000 and one and a quarter million international units, followed by corpus luteum extract, ought to be sufficient to produce menstruation in an ordinary case of secondary amenorrhoea, if not in a castrated woman, and so I decided to try three-quarters of a million international units as a start on four cases. One of these four cases was castrated, and therefore the dose decided upon would probably be ineffective, but would act as a control ; if, however, it was not ineffective but a success, then three-quarters of a million units would be a sufficiently big dose, and the previous doses used would be proved to be too large.

Technique

The dose was spread out over a fortnight and followed by corpus luteum extract as advocated by Bishop, Cook, and Hampson, their technique being followed exactly except for the smaller dosage. The extracts used were oestroform B and progestin, both products of British Drug Houses Ltd. A course of treatment consisted of injecting 150,000 international units of the oestroform B on the first, fourth, eighth, eleventh, and fifteenth days, and then one rabbit unit of progestin on the nineteenth, twentieth, twenty-first, twenty-second, and twenty-third days—the whole course taking twenty-three days to complete. As will be seen when the cases are described, not one of the four patients menstruated, although every one had some response, either by aching pains and a feeling of premenstrual discomfort or by general mental elevation.

Having had four failures with this smaller dose, for the second course of treatment all the patients had the full complement of oestrin as recommended by Kaufmann and others, and this was given after one month's rest. As a result of the two courses two of the patients menstruated and the other two were greatly improved although they never menstruated, one of them being the castrated woman. This patient had very similar pains to those she had had previously when she suffered from dysmenorrhoea, and these were a sufficiently powerful deterrent to make her give up any further treatment. The description of the various cases is as follows:

CASE I

A married woman, aged 27, complained of amenorrhoea for the last nine months. Puberty was at the age of 18, and her periods had always been irregular with occasional amenorrhoea, the longest previous lapse being for six months. Her periods usually lasted five to seven days and were sometimes accompanied by pain on the first day. She had been married for three years, but there had been no conception. She had a petite, boyish figure with small flat breasts; the secondary sexual characteristics were quite well developed. The uterus was small and acutely anteflexed; the cervix long and narrow with a small external os. The general impression given was one of genital hypoplasia with an adolescent or pubescent uterus.

Treatment was started in April, 1935, with the injection of 150,000 international units of oestroform. At the end of the course there was no appreciable result. A second course was begun in early May with the dose increased to 250,000 units. When this was completed there was still no menstruation, but the breasts were larger, the figure much more mature, and the libido was increased. Cases of hypoplasia, such as this one, need large amounts of oestrin, and as there had been some improvement, a third course was given, the dose being the same as in the second. Five d[illegible] after this was ended a period started. This was normal in every respect and lasted for six whole days. There has, however, been no further success.

CASE II

An unmarried woman of 24 complained of five months' amenorrhoea. There was no history of any previous amenorrhoea, and she had a normal gynaecological history. Examination showed her to be well developed and healthy; there was marked facial hirsutes but no other abnormality was detected. The uterus was about normal in size; the cervix was normal and the fornices were clear.

Treatment was started, as before, with 150,000 units, and again there was no appreciable result. After the standard course had been given one month later, a period began the day before the last injection was due, on June 14th, and lasted five full days, which was the normal previous duration. The next month there were the usual aches and discomforts which had previously heralded the on-coming of the menstrual period, but there was no flow. One week after this lapse the treatment was again begun, and on the last day of the injections another perfectly normal period started (August 17th). Since then there has been one further period in October without any treatment at all.

CASE III

An unmarried woman, aged 37, five years previously had had intrauterine radium applied for 1,805 mg.-hours in order to produce what was hoped would be a temporary menopause. This was done for very severe and intractable dysmenorrhoea. Since that operation she had put on weight steadily, the periods had ceased entirely, and for one month immediately after the radium application she had hot flushes. She wished to have her periods restored to her if possible, as she had recently become engaged to be married. Her breasts were large, though there was not much actual glandular tissue palpable. There was a decrease of the vaginal mucous secretion; the cervix was normal, the uterus small and anteverted, its internal length being one and a half inches instead of the usual two inches.

Treatment was started in March, 1935, with 150,000 international units of oestroform B. When this was finished the only result was that the patient stated that she felt brighter and more alert mentally, and more physically active than she had done ever since the insertion of the radium. Three weeks after this course was completed a second one was started with 250,000 units, and after she had had the fourth injection the patient complained that she had had colicky pains which lasted for six hours. After the fifth injection (the last one of oestroform) the pains began again and were very severe and similar to those she had had with her periods previously. These lasted intermittently for five or six days, during which time the progestin was given without either starting her period or alleviating her pain. Except for the improved mental outlook, which had persisted, and the dysmenorrhoeic pains, there was no result, and the patient, having had a reminder of her dysmenorrhoea, would not continue with the treatment.

CASE IV

An unmarried woman, aged 22, complained of amenorrhoea which had lasted since December, 1932. Puberty was at the age of 14, and she had had normal periods for four days in every twenty-eight days for two years. There was then a pause for nine months, during which time she was treated by her panel doctor. The periods then returned exactly as before and were consistent and regular until December, 1932, since when there had been absolute amenorrhoea. During 1933 she had twelve months' treatment, which included drugs such as calcium and iron, and such hormones as thyroid extracts and antuitrin S (a Parke Davis extract of the pituitary hormone which stimulates the corpus luteum). None of these had had the slightest effect. The patient herself looked very small, thin, and undernourished, and had a rather quiet and nervous disposition, but apparently she was being paid well as a book-keeper and was above average intelligence. The hymen was intact, the cervix and uterus small but within normal limits, and the appendages were normal.

Treatment was started in March and, as in the other three cases, 150,000 units were given in the first course and 250,000 units in the second. The primary course was without results and the second was started after a month's rest. This was also without effect, except for the fact that the patient stated she felt better than she had done for two years. The impression given by the patient was that the cause of her amenorrhoea was mental rather than a primary breakdown of her endocrine system, but she would admit of no emotional trouble or problems of any kind, and the case must be written down as a failure. It is possible that the amenorrhoea was only a symptom associated with anorexia nervosa.

Conclusion

Summing up the four cases just described, two of them can be counted as successes in that a normal period was produced in each patient following treatment; one of them had three normal periods, two immediately following a course of injections, and the other six weeks after the last period without any treatment at all. The third case, that of the castrated woman, is difficult to assess justly. One cannot say that there were changes in the genitalia, but there were definite premenstrual pains, and even the dysmenorrhoea itself without the menstrual flow. It is idle to speculate what another course of treatment would have resulted in, but without it the case must be called incomplete rather than a failure, because there were definite indications that another course was justified. The remaining case, as has already been mentioned, was a failure. That leaves two successes, one incomplete success, and a failure.

Considering that a course of treatment, following the technique described, costs about four guineas, and that to guarantee a result at least two courses are necessary, most probably three, it is obvious that this treatment can only be administered to a chosen few. Even then it is probable that only two or three periods will result in the majority of cases. However, it is not so much the therapeutic value of the work of Kaufmann and the others that counts, but rather the experimental knowledge of the endocrine functions of the ovary and corpus luteum.

As a result of their experiments some very definite conclusions and facts can now be said to be in our possession, facts which, even though they were surmised and embodied in hypotheses beforehand, had not been conclusively proved. That the primary hormone of the ovary, oestrin, is responsible for the growth and development of the uterus is now beyond dispute, and by the administration of massive doses of this hormone many a young woman, who ordinarily would have been condemned to a sexually immature, sterile, and probably dysmenorrhoeic life, can now be cured and made normal; just as a potential cretin can be saved by early medication with thyroid extract. The oestrin produced by the ovary is therefore responsible for the growth of the uterus and endometrium, and if this is in excess of the normal, then cystic hyperplasia of the endometrium develops. This is seen in the condition of metropathia haemorrhagica, where one ovary is fibrosed and functionless and the other is cystic and producing oestrin but not forming corpora lutea and hence no progestin. Progestin during the last ten to fourteen days of the intermenstrual period is essential for the production of a normal endometrium capable of receiving and embedding a fertilized ovum, and is therefore an integral part of the therapeutic technique.

The balance between oestrin and progestin is interesting; Kaufmann thought that thirty-five rabbit units of progestin were necessary, but the English writers state that only five units are needed to produce true menstruation, and the latter appears to be the correct figure. The dosage of oestrin varies with the different workers. Bishop, Cook, and Hampson at Guy's and Kaufmann at Vienna use one and a quarter million international units and the Americans, Werner and Collier, much less. The latter state with certainty that 75,000 international units are the minimum clinical dose of oestrin, but for true menstruation they maintain that nearly a million units are essential. There is almost certain to be a considerable margin of error or discrepancy between the figures of the various workers as each one uses a different preparation, and, even if they are all standardized, it seems doubtful if the products retain their potency with keeping, and the standard itself is open to individual variations of value.

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J. Karaseff (*Journ. de Radiol. et d'Électrol.*, July, 1936, p. 373) found radiographic changes in the bones and joints in 95 per cent. of all cases of leprosy. The changes affect mainly the distal ends of the extremities. They are of a destructive nature. They appear under two different forms: (1) local osteoporosis, seen mainly in persons of the hyposthenic type; (2) osteo-articular destruction, seen only in pronounced cases of leprosy of the nervous system. These changes are met most frequently in the feet. The spine is never affected in leprosy. The bone changes become more pronounced with the general progress of the disease.

L. M. Ruiz (*Arch. Med., Cir. y Esp.*, May 30th, 1936, p. 354), who records an illustrative case, maintains that mononucleosis is of importance in the diagnosis of malaria, and should be studied whenever the presence of the plasmodium cannot be demonstrated. In quotidian fever and atypical forms of malaria a diagnosis must be made from other diseases, especially acute leukaemia and glandular fever or infective mononucleosis. Apart from its diagnostic value a differential leucocyte count is indispensable in the examination of a case of malaria, as the neutrophil picture is a guide to the patient's resistance.

THE PROBLEM OF OTOSCLEROSIS

BY

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The clinical picture of otosclerosis is so indefinite, its symptoms are so often shared by other forms of deafness, and its physical signs are so few and inconstant, that the diagnosis can only be made with varying degrees of probability. When it is added that no treatment is known that has the slightest effect on its course it might well be supposed that the worst had been said. Nevertheless, by constantly diagnosing the disease on insufficient data and by persisting in its treatment otologists have added an aspect to the subject which carries with it something more than the reproach of an unsolved problem.

The outstanding pathological features of otosclerosis are: the bony fixation of the stapes, the occasional involvement of the basal coil of the cochlea, and, though this has not yet been proved, degenerative changes in the auditory nerve. According to the relative time incidence of these factors the clinical picture of otosclerosis may, apparently, vary from that of a middle-ear "obstructive" deafness to that of pure nerve deafness. Moreover, this picture need not possess one symptom that is not constantly present in other and far more common types of deafness. The facile diagnosis of this disease is almost as great a mystery as its aetiology.

The Bezold Triad

For the past fifty years otologists have reiterated the statement that a case of progressive deafness with the Bezold triad and nothing obvious to account for it is otosclerosis. This "triad" consists of: increased bone conduction, negative Rinné, and loss of low note perception. As the increased bone conduction is caused by the loss of low note perception, and as the "negative Rinné" is merely a quaint way of expressing this ratio, it is not very obvious why there should be this insistence on its being three signs instead of only one. At the best this "syndrome" can only be of diagnostic value in uncomplicated cases in which fixation of the stapes precedes any serious involvement of nerve or cochlea. Yet it is made to apply to cases in which otosclerosis is supposed to coexist, as well it may, with conditions known themselves to produce the Bezold "triad"—that is to say, middle-ear deafness or loss of low note perception.

There are certain other features of otosclerosis the diagnostic value of which I will briefly attempt to assess. It will be noticed that they may all be absent in otosclerosis, while, with very few exceptions, even their presence only becomes significant in the aggregate.

Other Diagnostic Features

The Family History.—At least half the cases are diagnosed in the absence of any family history. Unless it can be investigated, and this is rarely possible, even its presence must often be misleading.

Age of Onset.—Although the disease usually starts round about puberty, it may start at any other period. It has been found, and verified microscopically, in the seven-months foetus, to say nothing of intervening and later stages. Nager cites a case in which recent deafness in a man of 70 was diagnosed as otosclerosis. In the individual case, therefore, the time of onset can scarcely be of more assistance in diagnosis than the greater incidence in the female sex.

Course of the Disease.—Although the deafness in otosclerosis is progressive, it is not uniformly so. There may

be long periods during which it is stationary. There may even be short periods of apparent improvement. There cannot, therefore, be anything pathognomonic about the earlier part of its course.

The Tinnitus.—Typically this is high-pitched, continuous, and precedes the deafness. Often, however, it follows the latter and it may be completely absent. Tinnitus is, moreover, a frequent accompaniment of almost every condition which may affect the ear, from wax in the external meatus to Eustachian catarrh, and from anaemia to blood-pressure changes.

Paracusis Willisii (that is to say, ability to hear better in a noise).—The mechanism of this is not understood. It is certainly not pathognomonic of otosclerosis. It is often absent when this is diagnosed and is often present in other forms of deafness.

Diminished or Absent Secretion of Wax.—Many normal ears have no wax when examined. On the other hand, wax may be present in otosclerosis. Only a prolonged and elaborate investigation could satisfactorily determine that its rate of secretion was below the normal. Yet the reappearance of wax during treatment is frequently taken as an indication of the success of the latter.

Fixation of the Stapes.—It is generally admitted that there is no means of diagnosing this fixation during life, Gellé's test being quite unreliable. Yet Nager states that we can only diagnose otosclerosis in the presence of this fixation.

The Flamingo Flush on the Drum.—This is seen in less than a third of the cases diagnosed as otosclerosis. It is interpreted as the increased vascularity of the new bone in the otic capsule showing through the drum.

The diminished sensitiveness of the meatal skin and the absence of a "vasomotor response" to tactile stimulation of the drum are generally regarded as useless as aids to diagnosis.

There remains the radiological examination of the bony lesion in the otic capsule itself. Although this has been attempted, and plates published purporting to show the osteoporotic area, the general consensus of opinion is that this also gives no help.

Personal Equation of the Observer

After this analysis of the otosclerotic picture it will surprise no one to find that the proportion of deaf patients diagnosed as suffering from this disease differs greatly with different observers. In a series of over one thousand private cases J. A. Wright found only 7 per cent. This was also Bezold's figure. Nager finds 20 per cent. and Shambaugh 30 per cent. Nager suggests that these varying figures may be due to racial differences. This cannot apply to the Edinburgh series, in which Fraser's private ear cases gave 27 per cent. and the out-patient department of the Royal Infirmary just over 6 per cent. Fraser suggests that his private cases are a selected group owing to his well-known interest in this type of deafness. The alternative explanation this survey suggests is that the personal equation of the observer bulks largely in the uncertain diagnosis.

If this uncertainty exists in the uncomplicated case, what of those cases in which the disease is diagnosed in the presence of middle-ear changes known to produce the same functional disturbance? Gray in his monograph diagnoses even early otosclerosis in the presence of aural sepsis. Fraser admits the difficulty, but nevertheless regards aural sepsis as a predisposing factor. Lowndes Yates describes cases of subacute and recurring otitis media in which the graph of the deafness was identical with that usually postulated for otosclerosis. These cases were apparently treated by the intermittent suction of pus from the Eustachian tube. It is not surprising to find that in at least one case the associated deafness increased with each recurring exacerbation of the sepsis. Yet Yates suggests that otosclerosis may be the terminal stage "of subacute otitis media in which the products of the inflammation are conveyed away by the Eustachian tube." It might well be suggested that any complications arising from this condition would be due to the Eustachian tube *not* "conveying away" in anything like an adequate manner. He adds that if the condition is more acute, and a perforation forms, the case is not regarded as otosclerosis, "though the impairment in hearing may be similar."

Diagnosis on Inadequate Data

This brings us to the consideration of the cases in which the deafness is accompanied by little in the way of objective signs of infection other than the retraction and fixation of the drum. The latter is, of course, the expression of the gradual scar fixation of the ossicles, including the stapes. The causal condition may be catarrhal involvement of the middle ear, or it may be a "latent" epitympanic or mastoid suppuration "drained by the Eustachian tube." Yet from the literature one would gather the impression that this progressive atrophy and scar contraction of the middle-ear contents—"if such a condition has any real pathological existence," to quote Dr. Gray—was itself regarded as otosclerosis. The frequent good hearing of the patient with a discharging ear and with drum and malleus destroyed is a commonplace. So also is the rapid onset of deafness after the radical mastoid operation. Apparently only the fact that it takes place in weeks instead of years prevents this also being diagnosed as otosclerosis. Of what use is it to maintain that the diagnosis is made on the Bezold syndrome when it is made in the presence of conditions which can themselves amply account for this "pathognomonic" syndrome?; when, moreover, it is assumed that the pathology permits the disease to appear as a pure nerve deafness? Nager, after emphasizing the Bezold syndrome—"Above all the tuning-fork tests"—says that he does not hesitate to diagnose otosclerosis in cases of progressive deafness in spite of pathological "residues" in the drum. He regards progressive deafness in such cases, without otosclerosis, as extremely rare. It would at least be more logical to admit that the only constant feature on which the diagnosis of otosclerosis is made is the existence of progressive deafness.

Treatments, New and Old

Were there a specific treatment for otosclerosis this desire to diagnose it on inadequate data would be explicable. It would not only be giving the patient the benefit of the doubt, but there would be the possibility of a therapeutic confirmation of the diagnosis. There is, however, no treatment known to affect the course of the disease. What, then, are we to say of the various forms of treatment so assiduously practised? Fraser gives a dismal list and asks why, when the general surgeon has given up trephining microcephalic skulls, we should not follow his lead and abandon methods of treatment that have proved useless? Others, including the unfortunate patients, may well ask the same question.

A treatment that has had its day rested on the wholly unwarrantable assumption that paracusis Willisii was pathognomonic of otosclerosis and that an atrophic drum was its cause. The patient started the treatment with the deafness of an acute myringitis and ended, if she was fortunate, with her original hearing. Throughout the treatment, however, she remembered only the steady improvement. The electrophonoïde treatment of Zund-

Burguet is of more recent origin. It is said to work by "re-educating" the ear by minimal auditory stimuli. As one exponent of the method claims that it acts by producing a local hyperaemia, and another places the lesion in the cerebral cortex and regards it as due to intestinal toxaemia, the rationale of the method is a little difficult to grasp. It is, however, significant that the patient is warned that one or two years' treatment may be needed.

The Need for a Scientific Approach

At a discussion on this subject at the B.M.A. Meeting in Edinburgh in 1927, Dan McKenzie deplored the attitude of regarding all forms of treatment for otosclerosis as useless, and maintained that we should pass all therapeutic measures under strict scientific examination. Some hints of what members regarded as scientific methods emerged during the discussion. Guthrie, who had seen no conclusive results from the Zund-Burguet method, thought that the mental attitude of both doctor and patient entered very largely into the treatment. Another member of the Section, who said that he would rather lie under the false stigma of quack and charlatan than break his Hippocratic oath to do the best he could for his patients, admitted that in a considerable proportion of his cases treated by this method there was a functional element. Yet another member, after objecting to Jenkins' method of using the term "otosclerosis" so as to include, as he considered, other middle-ear conditions in addition to true otosclerosis, quoted the case of an "otosclerotic" lady who after a course of the Zund-Burguet treatment, had her hearing increased from five to forty-eight feet. "In view of such a case, and it was not unique," the member said he did not consider himself justified in abstaining from giving this treatment in otosclerosis. He then added that he believed the improvement in the case quoted to have been entirely functional! It is true that "you can perform any miracle if you only make a wrong diagnosis," but the miracle fails to impress when the absurdity of the diagnosis is thus flaunted in our faces. Are we out to compete with the faith cures of the revivalist meeting? Professor Nager, who, like Fraser and many others, had never seen any result from the Zund-Burguet method, touched upon another aspect of the question when he said that he had seen patients coming from the celebrated Coué who were convinced of very marked improvement, though the tuning-fork tests remained unchanged. There is probably no class of patient so ready to believe himself better when he is not than the deaf—perhaps a not unnatural result of the urgent wish. These cases and the hysterical *malade imaginaire* are the backbone and mainstay of such forms of treatment, each exponent presumably remaining "true to his oath" but not, apparently, obliged to pass his methods under "strict scientific examination."

Gray's treatment by the intratympanic injection of thyroxine was based on the assumption, as yet unproved, that this would produce a local increase in the circulation similar to the general increase seen after its internal administration. This improved local circulation was expected to produce an improvement in the hearing analogous to that seen in his "paradoxica" cases. Only fourteen cases were published, and of these seven were unaffected. In the remaining seven the improvement, though claimed by Gray as great, was well within the limits of variation seen in so many cases of deafness. Apparently no controls were used, and when in one case this was inadvertently present in that the untreated ear showed greater improvement than the one treated, Gray attributed this to a "crossed reflex." Although the treatment was claimed to be the rational outcome of the author's theory of the pathogenesis of otosclerosis, it was described as a treatment for "allied types of deafness" also. These "allied types" appear to be "so-called chronic dry middle-ear catarrh—if such a condition has any real pathological existence." Indeed, a warning was uttered against attempting to differentiate between the two conditions, since it is apparently in the latter type that the greatest improvement was expected. Subsequent investigation has entirely failed to justify Gray's expectations.

Admittedly the problem of otosclerosis is a difficult one. It is not likely to be solved by doubtful diagnosis and still more doubtful observations on the results of treatment.

ESTIMATION OF THE COAGULATION TIME OF THE BLOOD: A SIMPLIFIED METHOD

BY

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AND

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Numerous techniques for estimating the coagulation time of the blood have been devised during recent years, varying from elaborate procedures involving lengthy times of observation and the use of expensive apparatus to the simpler methods employed in the ordinary clinical laboratory. Since the estimation of the coagulation time of the blood is of great importance in the differential diagnosis of various haemorrhagic conditions there is no apology needed, it seems, for the introduction of yet another technique, the ease and simplicity of which serve as its own recommendation.

Apparatus Required

One glass tube drawn out into a capillary open at both ends is the only essential piece of apparatus. Gross variations in the size of the capillary bore are to be avoided, but the minor variations of capillary tubing drawn out in the ordinary laboratory do not influence the experiments significantly. A filter paper divided by pencil into segments from the centre is required for receiving the drops of blood expelled from the tube. An ordinary watch with a second hand attached can be used for marking the time intervals, but a stop-watch, if available, is more accurate and convenient.

Method

Blood is drawn up into the capillary tube by surface tension, and at minute intervals the end is placed in a slanting direction on to the segments of the filter paper. Before coagulation the drop of blood is absorbed into the filter paper. After an interval varying from five to nine minutes for normal bloods a tiny thread of fibrin stretches out from the filter paper to the end of the capillary tube. The appearance of this thread of fibrin is taken as the coagulation time of the blood in question, and there is no possibility of mistaking the appearance of the fibrin thread in practice, so that uniform results can easily be obtained on repetition.

Experimental Work

The modified method was tried out in comparison with the well-known standard Wright's capillary tube technique in twenty normal cases and in ten pathological ones. The advantage of the newer method is obvious here in that only one capillary tube is needed instead of the ten or twelve tubes used for Wright's technique.

In the first six of the normal cases variations at three temperatures were observed, and comparison of venous

and capillary blood coagulation times was made in Wright's method, while the modified method was compared at room temperature only (Table I). Conversely, in the next fourteen of the normal cases Wright's method was estimated at room temperature only, and the newer method was tried out at the three temperatures (Table II): room temperature (*circa* 17° C.); 21° C (theatre temperature); and 25° C. For the maintenance of these three temperatures large glass beakers filled with water were placed on hot plates and the temperatures of the water, as registered by thermometers immersed therein, were kept at constant levels by means of the electric regulators together with asbestos mats.

To keep the water from rising in the capillary tubes for Wright's method the ends of the tubes were sealed in a micro-burner before immersion, and for the newer method at the higher temperatures the capillary tube was bent into a "U" shape so that both open ends could be above the surface of the water.

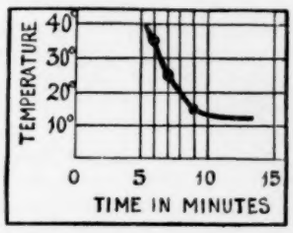
TABLE I.—*First Series of Normal Cases*

Case No.	Wright's Method: Kind of Blood	Wright's Method: Room Temperature	Wright's Method: 25° C.	Wright's Method: 37° C.	Newer Method: Kind of Blood	Newer Method: Room Temperature
		minutes	minutes	minutes		minutes
1	Venous	9	7	6	Venous ...	8
	Capillary	8	7	6	Capillary...	7
2	Venous	6	6	5	Venous ...	7
	Capillary	7	6	5	Capillary...	8
3	Venous	8	8	6	Venous ...	8
	Capillary	8	7	5	Capillary...	7
4	Venous	8	7	6	Venous ...	7
	Capillary	8	6	5	Capillary...	9
5	Venous	7	5	4	Venous ...	7
	Capillary	8	6	4	Capillary...	8
6	Venous	7	5	4	Venous ...	7
	Capillary	8	7	5	Capillary...	8

TABLE II.—*Second Series of Normal Cases*

Case No.	Newer Method: Kind of Blood	Newer Method: Room Temperature	Newer Method: 21° C.	Newer Method: 25° C.	Wright's Method: Kind of Blood	Wright's Method: Room Temperature
		minutes	minutes	minutes		minutes
1	Venous	8	8	7	Venous ...	8
	Capillary	8	5	5	Capillary...	5
2	Venous	6	5	5	Venous ...	6
	Capillary	6	5	5	Capillary...	6
3	Venous	6	5	5	Venous ...	6
	Capillary	6	6	5	Capillary...	6
4	"	7	6	6	" ...	10
5	"	8	8	6	" ...	8
6	"	13	9	9	" ...	10
7	"	7	7	6	" ...	7
8	"	5	4	3	" ...	5
9	"	9½	8½	7	" ...	8½
10	"	7	6	6	" ...	7
11	"	7	6	6	" ...	7
12	"	10	9	8	" ...	10
13	"	7	6	6	" ...	7
14	"	6	6	5	" ...	6

From an analysis of the six cases of the first series we see verified the already recognized fact of the decrease of coagulation time with rise in temperature.



This stresses the need for knowledge of the temperature conditions of the experiment. However, from consideration of the second series, we see that four or five degrees difference in temperature is necessary before the result is altered outside the limits of experimental error. Thus in the second series in only two cases does the raising of the room temperature to 21° C. produce an alteration of more than one minute in the coagulation time. This fact is valuable from the point of view of estimating coagulation times in surgical procedures, when it may be convenient to do tests in the operating theatre itself, the temperature of which is usually about 21° C. The results of such tests will clearly be comparable with the results of tests done at other times in the out-patient room or at the patient's bedside. Furthermore, in seventeen of the tests made above the new method agrees with Wright's method either identically or with only a difference of one minute, which must be considered to be definitely within the limits of experimental error. For the other three tests the variation is less than a pathological difference would be.

TABLE III.—*Pathological Cases (at Room Temperature)*

Condition	Wright's Method	Newer Method	Condition	Wright's Method	Newer Method
	minutes	mins.		minutes	mins.
Purpura	15	15	Jaundice	11	12
Reputed haemophilia Jaundice	6	6	Jaundice	11	13
	8	8	Epistaxis bruising	8	7
Hodgkin's disease Jaundice	10	10	Jaundice	9	10
	10	12	Carcinoma of liver	10	10

Summary

An extremely simple modified method of estimating the coagulation time of the blood has been demonstrated; one which is easy of application and capable of yielding reliable results in the hands of an experienced technician.

According to R. BACHRACH (*Wien. klin. Woch.*, September 11th, 1936, p. 1123) infection of the urinary tract by *Entamoeba histolytica* is a rare finding. Posner first reported a case in a German in 1893. Of amoebic cystitis Panojataton has reported seven cases in Egypt, and Franchini ten from Bologna, including some in which there was no evidence of intestinal infection. The mode of infection of the urinary passages is usually by urethro-vesical extension in women, but is haematogenous or lymphogenous in man. The clinical features were unspecific—chiefly haematuria, dysuria, and secondary renal symptoms: cystoscopic findings have included ulceration and cyst formation and have sometimes been negative. Bachrach describes a case of amoebic urinary infection in a European from Shanghai who showed cystoscopically a vesicle papillomatosis and in whom the urinary sediment contained numerous amoebae as well as gonococci: after treatment by emetine for fourteen days the parasites disappeared from the urine and the papillomata were excised. Death occurred eventually from pyelonephritis and was preceded by reappearance of the amoeba in the urine. Amoebae had also been detected in the excised papillomata lying encysted between the epithelial cells. Bladder papillomata, not uncommon in chronic bilharziasis, have not hitherto been reported in amoebic infections.

Clinical Memoranda

Lung Abscesses of Uncertain Origin

The following two cases of pulmonary abscess seem to be of clinical and pathological interest, inasmuch as the primary focus could not in either case be definitely established.

CASE I

An architect, aged 36, had an operation for deflected nasal septum in December, 1935. Recovery was uneventful, and a clean union between the septal flaps took place. On January 29th, 1936, on returning from London, he was seized with a sudden pain in the left side. I was called in the following day, and found the patient moderately ill, with a temperature of 100° F. and a distant pleural rub over the lower part of the left chest in front. The temperature for the next few days remained between 99° and 100° F. Cough was troublesome, but there was very little sputum and no haemoptysis. The sputum, on bacteriological examination, revealed nothing of pathological interest. The patient recovered in a week, and no physical signs whatever could be detected.

On February 11th, 1936, I was called to the patient at midnight, and found that he had a spontaneous pneumothorax. He was admitted to a nursing home, and several pints of clear olive-green fluid were aspirated. The pleural fluid changed in the course of twenty-four hours to a thin, fetid pus, from which streptococci were cultured, and the clinical condition became very grave. The temperature assumed a hectic type, and dyspnoea was very marked. The chest was aspirated daily, and several injections of anti-gas-gangrene serum were given. In a week's time the pus became much thicker, and on the advice of Dr. L. S. T. Burrell, who had been called into consultation, an intercostal drainage was performed by Mr. A. C. Halliwell. The improvement in the clinical condition was dramatic, but a rib resection became necessary later. Since then the patient has slowly recovered, though the process has been a stormy and anxious one.

CASE II

A garage proprietor, aged 55, developed a pulmonary abscess following a central pneumonia in the right upper lobe in 1930. This was drained by rib resection and incision of the lung tissue. Recovery was uneventful, and for the past six years he had been in moderately good health except for occasional attacks of influenza. On May 22nd, 1936, I found him suffering from what I took to be an attack of influenza. His temperature fluctuated between 99° and 101° F. for over a week. There were no physical signs in the chest, although he complained of cough. The sputum was scanty and negative to T.B. All tests for enteric infection were negative. His teeth were very septic, but an ear, nose, and throat surgeon reported his sinuses to be free from infection. On one occasion when I was examining him he gave a deep cough, and the sickly stench of pulmonary abscess became apparent. He was removed to a nursing home, and later to Brompton Hospital. By this time the sputum was thick and moderately offensive, and he had had a slight haemoptysis. At Brompton Hospital he was examined by Dr. L. S. T. Burrell and Mr. J. E. H. Roberts, who diagnosed an abscess in the left lower lobe. A pleural effusion had by this time developed, but proved to be sterile on paracentesis. Unfortunately at this period the patient developed a volvulus of the caecum, and an emergency laparotomy had to be performed. He recovered from this, but the chest condition rapidly became worse, and he died following an intercostal drainage.

At post-mortem examination a large lung abscess in the left lower lobe was present with no carcinoma, and no obvious cause was found for the abscess. The heart muscle was flabby, and this apparently was the cause of death.

COMMENTARY

In Case I the clinical condition was presumably one of pulmonary abscess and gangrene with a pyopneumothorax. Dr. Burrell suggested as the cause a small embolus from the field of operation, but the surgeon who performed it did not agree. It might be suggested that the patient developed a localized patch of pneumonia with abscess formation. Against this hypothesis is the lack of physical signs at the time of the first illness. Yet another suggestion would be the inhalation of a septic clot at the time of the operation, but this assumption can easily be rebutted by the fact that the patient throughout his entire illness never coughed up any offensive sputum, and also that there was a long interval, during which the patient was well, between the operation and the onset of the first illness. The cause of the abscess must remain a mystery.

In Case II, again, no obvious cause for the abscess could be detected. The only septic focus to which an abscess could be attributed was the teeth. On the other hand, he had had septic teeth for years, and out of the millions of people who have septic teeth how many develop a pulmonary abscess as a result of inhalation? The post-mortem examination did not reveal any pneumonic condition of the lung which could have led to suppuration. This case is especially interesting in that the patient developed two lung abscesses with an interval of seven years between them.

P. G. BENTLIF, M.D.Camb., M.R.C.P.

Jersey.

A Case of Hebaral Sodium Poisoning

The following case is recorded as being, I believe, the first of its kind, and therefore of particular interest. (Hebaral sodium is the sodium salt of normal hexyl-ethyl barbituric acid, and is classed with the rapidly acting barbiturates.)

On June 4th an unconscious woman was admitted to the Victoria Hospital, Worksop.

The previous medical history was as follows. Severe mental shock five years previously, giving rise to insomnia and agonizing pains in the head. Various sedative drugs had been tried without success, but hebaral sodium (P., D. and Co.), two 3-grain capsules nocte, was effective in inducing satisfactory sleep, and accordingly for six months this treatment had been carried out. During the week before admission to hospital the pains had been more troublesome and the patient had been taking four capsules each night, on her own responsibility. Two hours before admission she had been found "asleep," with the empty box beside her," and every effort to rouse her had been unavailing. It was later discovered that she had taken at least ninety grains of hebaral sodium, altogether fifteen to thirty times the average dose.

Condition on Admission (at 9.30 p.m.).—Temperature, 98.4°; pulse, 88—weak but regular in time and force; respirations, 24 per minute—sighing in character. Pupils contracted, but not pin-point; corneal and light reflexes, brisk; conjunctival reflex absent. Complete flaccidity of all voluntary muscles with corresponding absence of superficial and deep muscle reflexes. Blood pressure, 70/40 mm. Hg.

Treatment and Course.—The patient was given strychnine 1/60 grain and pituitrin 1/2 c.cm. hypodermically, and a stomach lavage with warm water. One pint of a 5 per cent. glucose solution with 2 oz. of brandy was given by the stomach tube, and glucose salines per rectum. The usual shock treatment was administered, but morphine was, of course, withheld. The patient was catheterized. Her blood pressure rose to 90/60 mm. within an hour. Two hours after admission to hospital the blood pressure was 110/80 mm. and partial consciousness was regained. Slight voluntary movements returned, as also did the conjunctival, jaw, elbow, wrist, knee, and ankle reflexes. At this stage the pupils were dilated. Hot coffee was given by mouth. In a very short time, however, the patient relapsed into unconsciousness, and the clinical findings were similar to those seen on admission, save that in this instance the blood pressure did not drop below 90/60 mm. Although this fact was taken as a sign of improvement, the blood pressure was still considered to be too low, and icoral (1 c.cm. into each buttock) was given. The result of this injection was a somewhat startling rise in blood pressure in the subsequent half-hour. At 1 a.m. it was 190/130 mm. (Lumbar puncture was carried out at this time, the cerebro-spinal fluid flowing at a rate of 96 drops

per minute until 6 to 7 c.cm. had been withdrawn.) By 2.30 a.m. the blood pressure had settled at 140/90 mm. and the patient was again semi-conscious. Her pulse was now strong and regular at 120. She gradually improved in her general condition, and by 9 a.m. on June 5th she was fully conscious. She knew where she was, and why, and remembered perfectly all that had occurred before 5 p.m. on the previous day. She had no headache, dizziness, nausea, or vomiting, as might have been expected. On examination her general condition was found to be normal in all respects. The patient was discharged from hospital some days later.

Further Clinical Investigation.—Specimens of urine, cerebro-spinal fluid, and gastric contents were sent to the laboratories of Parke, Davis, and Co. for analysis, with the following results kindly sent to me by the company. (1) Cerebro-spinal fluid: clear, colourless fluid with odour of cresol. Examined for presence of barbiturates, all tests negative. Less than 1 mg. in 2.50 mils. (2) Urine: examined for presence of barbiturates, showed slightly positive reaction but below limit of accuracy of the test. Less than 1 mg. in 50 c.cm. (3) Stomach contents: clear, colourless liquid with thin layer of fatty material (0.7 per cent. w/w). Examined for presence of barbiturates, showed positive reaction equal to approximately 4 mg. in 50 c.cm.

The patient's condition on admission to hospital was one closely resembling, if not identical with, the late third stage of general anaesthesia.

I would like to thank Dr. A. Ransome Wallis (under whose care the patient was in hospital) for permission to publish these notes, and Parke, Davis and Co. for their co-operation in the investigation of the case.

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Late House-Surgeon, Victoria Hospital, Worksop.

Herpes Zoster and Varicella

The relation between the virus of herpes zoster and that of varicella seems still to be the subject of dispute. Bruusgaard[1] in 1932 reviewed the theories and was able to show that zoster provides no immunity against varicella, and that in a certain number of contacts with zoster, varicella will be contracted within fourteen days. He owned, however, that the interrelationship between the two remained an unsolved question. The following cases may therefore be of interest.

TWO CASE RECORDS

1. On June 13th, 1936, a young farmer aged 22 had a severe eruption of herpes zoster throughout the distribution of the tenth right thoracic nerve. Seven days later, while the bullae were still big, he came out with a severe eruption of typical varicella all over his body. His temperature was over 100° F. for forty-eight hours, and he was in acute discomfort. Five weeks later there was no sign of the varicella, but the zoster scars were still evident. There was no herpetic pain at this time. No one else in the household had either zoster or varicella.

2. On May 8th, 1936, a female patient had a typical zoster eruption of the right ilio-inguinal nerve, with very acute pain. The household consisted of her husband, her son aged 3, and one maid. Fourteen days later the boy came out with a typical eruption of varicella, and fourteen days after this the husband did the same. There was no reason to suspect an external source of infection in these two cases.

COMMENTARY

If we accept the theory of the dualists who say that the zoster virus is of two types, of which one only will produce varicella in contacts, it would seem that Case 1 was of zoster non-varicellosa, and that he had become infected with varicella four days before he showed the zoster eruption. Case 2 would appear to be one of zoster varicellosa, but it is interesting to note that the adult husband only contracted varicella from contact with varicella in his son, in whom mutation of the virus was possible from his mother's zoster to varicella in him.

Twyford, Winchester. HUGH MALLINSON, M.B.

[1] *Brit. Journ. Dermat.*, January, 1932.

Reviews

TREATMENT IN GENERAL PRACTICE

Recently through the pious labours of Sir Percival Hartley and Mr. Aldridge we have been put into possession of a translation of the works of John Mirfield, the earliest known medical writer in this country. Mirfield was attached to St. Bartholomew's Hospital in the reign of Richard II, and he produced a compilation of the medical knowledge of his day. Amid much superstition one finds shrewd observation and intuition, but of methods of treatment the less said the better. It is interesting to compare this with the second volume of *Treatment in General Practice*,[1] reprinted from a series of articles in the *British Medical Journal*, and to gain thereby a bird's-eye view of the progress in rather more than 500 years. It is perhaps even more encouraging to compare this new book with the sections on treatment in the medical textbooks of my student days. How relieved one was then to turn to such exceptional books as those by Sidney Ringer and Burney Yeo, where treatment was not relegated to a few lines at the end of an excellent account of a disease and of its diagnosis. It is curious that the period of scientific materialism should have coincided with the period of therapeutic nihilism. It would not be a great exaggeration to say that the advances in treatment have been more rapid in the last fifty years than in the five hundred preceding ones. Never have the principles and details of treatment been more clearly laid down and lucidly expressed than to-day.

That claim can be illustrated and substantiated from this book, and the Editor's hope that with its predecessor it will form a useful *vade mecum* for the newly qualified as well as for the older practitioner of medicine is likely to be fulfilled. Where so many well-known authorities have collaborated it is perhaps invidious to particularize, but one may call attention to the emphasis which is laid on the details of treatment in common diseases such as peptic ulcers and other disorders of the alimentary tract, diabetes, and chronic rheumatism. The articles now reprinted began to appear more than a year ago, but recent advances such as Rosenheim's mandelic acid treatment and Herrmann's "pavaex" apparatus find a place, as does the importance of treating anaemia in nephritis. The treatment of renal oedema by potassium salts to the exclusion of sodium is, however, not mentioned. Dr. Gordon Holmes's article on syphilis of the nervous system and Professor Witts's articles on diseases of the blood and blood-forming organs will also be found particularly helpful. Dr. Kinnier Wilson's plea that in epilepsy "an atmosphere of normality should be sedulously cultivated" is worthy of careful observance. Too much of the superstitious horror with which this affliction was regarded in the past still lingers about it.

The type and format of the book reflect credit on all concerned—it is comfortable to hold and pleasant to read.

W. LANGDON-BROWN.

DIFFERENTIAL DIAGNOSIS

Perhaps the most difficult task that faces a medical author is to write a textbook on the differential diagnosis of symptoms, discussing with proper emphasis the relative importance of their indications as a guide to treatment. The best textbooks on the subject are therefore written by men with shrewd judgement and of long experience in practice and teaching. A book coming from the pen of such a renowned and leading physician and researcher as Professor NAEGELI of Zurich naturally demands atten-

[1] *Treatment in General Practice. The Management of Some Major Medical Disorders.* Vol. ii. Articles republished from the *British Medical Journal*. London: H. K. Lewis and Co. 1936. (Pp. 428; 4 plates. 10s. 6d. net.)

tion and study. The first two thirds of such a textbook have now appeared.[2] Among the numerous complaints of the patient and the objective findings on physical examination, the physician is usually able to pick out one leading symptom or sign which will enable him in the long run to make a true diagnosis. Leading signs which invariably show the correct diagnosis are unhappily rare ; a combination of two or more distinctive signs is more helpful. Many leading signs point to the site of the lesion, the nature of which may give rise to much discussion and thought. For instance, a well-defined shadow in the hilus of the lung combined with parasternal dullness on percussion defines the seat of the trouble but leaves in doubt, without further confirmatory tests, whether it is an early pleural effusion, a localized lung lesion, lung abscess or tumour, a swelling of the lymph glands from leukaemia or Hodgkin's disease, or one of many rarer conditions. In most cases, therefore, the author recommends a painstaking consideration of the facts, and especially whether there is evidence of inflammation, of intoxication, or of tumour ; whether the disturbance is limited to one organ or is more generalized ; whether one system of the body organs is involved ; whether there are signs of allergy, of avitaminosis, or of deficiency ; and whether the disturbance is functional.

It is to be expected in view of Professor Naegeli's own work that the first portion of his book should deal with anaemia and pass on to the haemorrhagic diatheses, leukaemia, and the various complaints associated with local or general enlargement of lymph glands. The blood diseases with which are combined different degrees of sore throat up to and including acute granulocytopenia are discussed, and the next section covers the differential diagnosis of diseases of the spleen. The differential diagnosis of diseases of the liver and gall-bladder is discussed in a masterly manner. In the differential diagnosis of abdominal affections attention is given especially to the varieties of abdominal pain, its distribution and spread, the author laying most emphasis upon the character of the pain complained of and bringing together a series of warnings on the possible misleading diagnoses from pain alone. The general condition, wasting and cachexia, bleeding from mouth or per rectum, and the presence of localized resistance and tumour are all taken into consideration, and in a well-argued section the main points of differential diagnosis of peptic ulcer, gastric carcinoma, and gastritis are dealt with. The author's experience is that a diagnosis of chronic appendicitis is usually wrong. Peritonitis may arise from many sources in the abdomen or from surrounding parts. Intestinal affections are dealt with under the large headings of diarrhoea and constipation. The section on diseases of lungs and pleura covers the ground adequately. The whole book when completed will comprise in all a volume of 700 to 800 pages, and the price is not to exceed thirty marks. This should be a useful addition to medical literature.

DIABETES

Another American diabetic manual for practitioners and patients appears from Dr. BORTZ of Pennsylvania.[3] It covers the usual ground of diet and insulin, with the minor variations which each individual diabetic specialist seems to find suitable. A glossary of medical terms starts the book, but is not likely to help the patient. The author bases his diet treatment on a carbohydrate unit of a special " block " of sugar weighing three grams, and all carbohydrate foodstuffs are compared with this. This makes his system quite inapplicable in this country, unless Fortnum and Mason can be persuaded to produce such blocks of sugar.

A small French book on Diabetes and Surgery,[4] by the voluminous writers CHABANIER and LOBO-ONELL, is much more serious and profound. Most of the important part of the book is spent in discussing the chemical pathology of severe diabetic intoxication, the condition of coma and pre-coma both before and after operation. They stress the serious diminution of serum chlorides in such conditions without perhaps making it clear that the basic sodium is more important. Their suggestions for treatment—hypertonic saline as well as insulin and glucose—are good, but the arrangement of suggestions for treatment is so diffuse that many a practitioner would have to let his patients die before he could apply the treatment suggested. The book lacks that practical tabulation and dogmatism which is necessary for emergency treatment.

PROGRESS IN ENDOCRINOLOGY

Professor A. T. CAMERON'S *Recent Advances in Endocrinology*[5] has proved its acceptability, for here within eighteen months comes a new edition. Yet even that short interval has seen striking advances. A clear account is given of Mansfeld's work on the mode of action of thyroxine, which has an important bearing on some questions of general interest. From a series of well-devised and apparently conclusive experiments Mansfeld believes that thyroxine is taken up by the nervous system and transferred to tissue cells through the peripheral nerves in a manner comparable to that of tetanus toxin and certain viruses. Thus a pathological process appears to seize a physiological path that is already open, and the behaviour of such toxic agents becomes more comprehensible. Arrived at the terminal fibrils, thyroxine finds its way to the interior of the tissue cells, reaching the zone of least aerobic oxidation, the zone where its own action can be most effective. One of the important generalizations of recent years has been the conception of nervous stimuli evoking a chemical substance to act as an intermediary between nerve ending and tissue cell. But Mansfeld's conception is that of the nerve fibre acting as a conduit for this particular substance. The work should have an interesting influence on our views of nervous action in general. That reactions may be evoked in the depths of the cell anaerobically by the aid of a hormone, and independently of the circulating blood, also gives food for thought.

A second research of general interest is that of Riddle and his colleagues on the lactogenic principle in the anterior pituitary to which they have given the name prolactin. It only acts on the mammary gland after it has been previously stimulated by oestrogenic agents. But its influence in modifying animal behaviour is so marked as to lead Riddle to comment thus: " The birth of an instinct as a response to a hormone seems to warrant the conclusion that to this animal the hormone temporarily adds a new element of consciousness." The ties between chemical action, nervous control, and emotional attitudes are seen to be ever closer and more intelligible, providing fresh clues to the integration of the individual.

A third point is that the work of Rowntree and Hensen on the thymus and the pineal at last definitely places these in the category of endocrine glands, thus resolving

[2] *Differentialdiagnose in der innern Medizin.* By Professor Dr. Med. O. Naegeli. Lieferungs 1 and 2. Leipzig: G. Thieme. 1936. (M. 9.60 each part.)

[3] *A Diabetic Manual for Practitioners and Patients.* By Edward L. Bortz, A.B., M.D., F.A.C.P. Philadelphia: F. A. Davis Company. 1936. (Pp. 222 ; illustrated.)

[4] *Diabète et Chirurgie.* By H. Chabanier and C. Lobo-Onell. With the collaboration of Mlle E. Lelu. Paris: Masson et Cie. 1936. (Pp. 168. 22 fr.)

[5] *Recent Advances in Endocrinology.* By A. T. Cameron, M.A., D.Sc. Third edition. London: J. and A. Churchill, Ltd. 1936. (Pp. 458 ; 65 figures. 15s.)

a long-standing controversy. When we add to these the discovery of protamine insulinate and more accurate knowledge of the chemistry of the oestrogenic compounds we can gather how rich the harvest of the last eighteen months has been. The book before us sets all this out lucidly, without undue dogmatism or rash speculation. It is therefore assured of the success which the earlier editions deservedly achieved.

PRIVATE NURSING

Just as the fledgling doctor on being plunged into the dizzy whirl of general practice soon discovers that he still has a great deal to learn which his medical school has not taught him, so the nurse fresh from hospital discovers almost a new world when she goes out nursing in private. To assist the newly qualified nurse in those matters in which she is least likely to have obtained much help during her hospital training, but which, nevertheless, may make all the difference between success and failure when she is on her own in private, Miss MARIANNE WENDEN has written *Private Nursing*,[6] a book which contains practically all that a nurse should know about the special technique of her craft. This is not a handbook of the nursing art, but a series of short chapters descriptive of the conditions to be met with in a private house, the proper relationship which should be established between nurse and patient on the one hand and nurse and doctor on the other, the material prospects which nursing in private has to offer, the equipment a nurse should provide herself with, and a host of other intimate details with which no private nurse should be unacquainted. Nursing in hospital and nursing in private are so very different, and the transition from one to the other may be so shattering to individual illusions, that all nurses on leaving their training school should read this book and adopt it as their guide, philosopher, and friend.

A DICTIONARY OF DENTAL SCIENCE AND ART

Most dentists will agree with the two prominent American dentists WILLIAM B. DUNNING and S. ELLSWORTH DAVENPORT, JUN., who sponsor the production of A *Dictionary of Dental Science and Art*,[7] that the time is ripe for such a work. The best medical dictionaries extant are inadequate for the needs of dental terminology. But this work goes a valuable step further in that it includes the terminology of "collateral but strictly related sciences." In the course of their labours the authors have rejected what they consider "half-baked and unscientific terms," and every practitioner with any literary or scientific attainments will thank them for this effort to eradicate the jargon of the pseudo-scientist. The work has also a historic value, including as it does "the best of the past with that of to-day," and portraits of men who have been conspicuous in the development of dentistry.

Turning to the body of the work one gets the impression that rather too little credit is given to the general education of the dentist. For instance the words *content, contiguity, contiguous, continuity*, seem to us to have no special technical meanings. On the other hand, one finds with pleasure, and even surprise, such words as *hircismus, hircus, congius*, words that were half-forgotten or even quite unknown! Surprise may also be excited by the absence of any note of the prophylactic value of vitamin D in dental caries: cod-liver oil is described as a "bone and tissue builder" and vitamin D as the "antirachitic factor," but there is no reference to the prevention of dental caries. Here and there we observed lapses from standard: In which two directions is a ginglymus joint movable? Does "omni hora" mean "every hour," or *at* every hour? But they are hard to find, and the considered verdict must be one of praise. The authors may justly be happy in the consciousness of an important task well done. The help given by specialists in "collateral but related sciences" adds greatly to the value of the work. We may quote as an example the note on *Sphenodon punctatus*, the tuatar "lizard" of New Zealand.

PASTORAL MEDICINE

A book entitled *Physician, Pastor and Patient*,[8] by Dr. GEORGE W. JACOBY of New York has for its subtitle "Problems in Pastoral Medicine." The title and subtitle serve well enough to cover the contents of the volume, but may be misleading apart from the Table of Contents itself. The book has nothing to do directly, and very little to do indirectly, with the movement commonly spoken of as "spiritual healing," or with the phenomena sometimes described as "faith healing." Its contents are of a practical kind, and have to do mainly with that co-operation which is often possible between doctors and the clergy in their daily work, and in those more general humanitarian and social movements in which they are alike naturally interested. Much of it is concerned with certain specific vital problems confronting the physician and the clergyman, such as contraception, sterilization, divorce, sex education, crime, suicide, mental deficiency, euthanasia, vivisection, and professional secrecy. Of these, vivisection is dealt with fairly adequately for the author's purpose; but the consideration given to the others is not very profound. There is some reduplication and even slight contradiction in several of the chapters, and a tendency to accept at their face value statements of eugenists and others which are of very doubtful validity.

The other parts of the book describe the development of medical science, the growth of superstition, the attitude of the various world religions towards health, the nature and limitations of the doctor's calling, and the position and requirements of the patient. It will be seen that the ground covered is very wide, and it is perhaps not surprising that the chapters are loosely strung together and produce a rather patchy effect. The great majority of them are characterized by sound sense, based upon long experience, but here and there we note leanings towards a surprising credulity. The whole book is a worthy and practical effort to help the three classes of persons mentioned in its title.

SHORT-WAVE THERAPY

ERNEST FRITSCH and MARTIN SCHUBART have, in an attractively printed and illustrated book of one and fifty pages,[9] managed to present a useful description of the physical principles, the indications, and technique of short-wave therapy. Their descriptions of the lines of force, how these concentrate themselves in the body, the tendency to selective warming from the nature of the current, the differences between spark-gap and valve-operated apparatus, are clear and evidently written from conviction. The tendency is, when a new method or apparatus

[6] *Private Nursing*. By Marianne Wenden, S.R.N., S.C.M. London: Faber and Faber Ltd. 1936. (Pp. 242. 6s. net.)

[7] *A Dictionary of Dental Science and Art*. By William B. Dunning, D.D.S., F.A.C.D., and S. Ellsworth Davenport, jun., D.M.D., F.A.C.D. London: J. and A. Churchill Ltd. 1936. (Pp. 635; 79 figures, 12 in colour. 28s.)

[8] *Physician, Pastor and Patient. Problems in Pastoral Medicine*. By George W. Jacoby, M.D. New York: Paul B. Hoeber, Inc. 1936. (Pp. 390; illustrated. 3.50 dollars net.)

[9] *Einführung in die Kurzwellentherapie. Behandlungstechnik und Indikationen*. By E. Fritsch and M. Schubart. Berlin and Vienna: Urban and Schwarzenburg. (Pp. 160; 100 figures. RM. 5.)

is introduced to medicine, for its advocates to damage its field of utility by claiming too much for it at first. Then, when disappointment follows unfulfilled clinical expectations, the pendulum swings too far to the other side, and a technique that may have a genuine but limited field of utility becomes neglected and scoffed at. Ultra-violet light a few years ago went through a phase of over-praise and exploitation exactly as short-wave therapy is now doing.

In a short section on malignant tumours it is satisfactory to find that the authors categorically state that no success follows treatment with short waves. This is in striking and welcome contrast to earlier claims that this current had a specific lethal effect on cancer cells at certain wave-lengths. Although a large part of this book is taken up with descriptions of the technique required for conditions (such as gynaecological) where the field of utility for short-wave therapy is doubtful, the authors do not claim that the results are without failure. There is, however, one part of this book that alone makes it valuable—namely, the section on the literature of the subject. This begins with a subsection dealing with the ordinary uses of short-wave therapy ; a further subdivision, beginning with a single contribution by Schliephake in 1928 and leading up to an extensive list for 1935, enables one to envisage the growth of this subject. Next, neurology is treated in the same way, year by year, then head and neck, teeth, gynaecology, and so on. Thus anyone wishing to form his own opinion on the value of short-wave therapy from the literature has here a fairly comprehensive bibliography well classified. The bibliography cannot, however, be regarded as really complete, for it conveys an impression that England has only once or twice in all these years produced anything on short-wave therapy worthy of a place in the authors' list. Unfortunately this is a common flaw in books on physical medicine written on the Continent.

Notes on Books

The proceedings of the ninth Congress of the German Society for Investigation of the Circulation,[10] held at Bad Nauheim last April in conjunction with the Medical Committee of the German Society for the Protection of Labour, contains a series of thirty-eight papers. The principal subject for discussion, on which twenty-five papers were read, was that of diseases of the circulation in their social and industrial aspects. The material includes contributions on the inheritance of circulatory diseases, statistics of circulatory diseases and mechanical and electrical damage to the circulation, carbon monoxide and cardiac infarction, and latent cardiac insufficiency. The remaining articles deal with a great variety of subjects, such as thrombo-angiitis obliterans, surgical treatment of hypertonus, photographic registration of the cerebral pulse, and results of treatment of vascular diseases of the extremities.

Where the Bright Waters Meet,[11] by Mr. HARRY PLUNKET GREENE, whose recent death is deplored by all music lovers, first appeared in 1924, and a third edition has been issued this year. This is a book of fishing reminiscences, centred on the River Bourne, a tributary of the Test. Sometimes, with the happy inconsequence of an Irishman, the author digresses to other subjects and other places, but always he shows the same zest and the same appreciation of the simple beauties of Nature. The famous singer dedicated this book to seven of his fishing cronies, including two distinguished members of the medical profession, the late Sir George Makins and the late Sir Seymour Sharkey.

[10] *Verhandlungen der Deutschen Gesellschaft für Kreislaufforschung.* IX Tagung. Edited by Professor Dr. Eb. Koch. Dresden and Leipzig: T. Steinkopff. (Pp. xx + 369 ; 47 figures. RM. 15.)

[11] *Where the Bright Waters Meet.* By Harry Plunket Greene. Third edition, revised and enlarged. London: Philip Allan Ltd. 1936. (Pp. 210 ; illustrated. 8s. 6d. net.)

Years of Endurance[12] describes the experience during the first half of the world war of Surgeon Rear-Admiral JOHN R. MUIR, who, when war broke out, was in charge of the Naval Barracks at Chatham, where he carried out the difficult duty of arranging the medical examinations entailed by mobilization. He was then principal medical officer in H.M.S. *Tiger*, and describes in graphic language the life and the various engagements, especially in the battle of Jutland. The volume is well printed, and is provided with interesting illustrations, among them a portrait of the author.

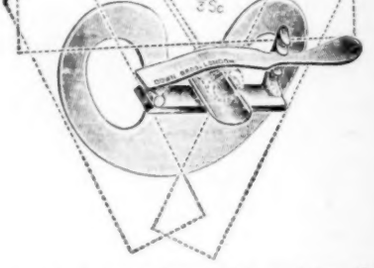
[12] *Years of Endurance.* By Surgeon Rear-Admiral John R. Muir. London: Philip Allan Ltd. 1936. (Pp. 292 ; 8 illustrations. 12s. 6d. net.)

Preparations and Appliances

PNEUMOTHORAX NEEDLE HOLDER

Dr. DAVID A. HERD (Liverpool) writes:

During pleural washouts or the treatment of spontaneous pneumothorax it is desirable to keep the needle securely fixed into the chest wall ; owing to respiratory or muscular movement the needle is liable to lateral displacement, and may work itself out of the skin. These defects are entirely overcome by using a small device that consists of a slightly



concave base with lateral fenestrations from the centre of which projects the needle support and a spring catch for instant adjustment or fixing. The holder is secured to the chest wall by strips of adhesive plaster, as shown in the illustration. I recently used a similar instrument in a case of spontaneous pneumothorax with valve action, the needle being kept in position for ninety-six hours.

This appliance is now being made by Messrs. Down Bros. Ltd., London.

AMYLOPSIN WITH TRYPSIN AND LIPASE

Panopsin is stated by the makers (Endocrines-Spicer Ltd.) to contain amylopsin, trypsin, and lipase. The amylopsin is standardized by the method outlined in the *U.S.P.* (vol. x), and has been found to be ten times stronger than the *U.S.P.* minimum standard for diastase. The preparation is recommended for the treatment of impaired digestive function.

CALCIUM GLUCONATE AND IRON

Tabloid calcium gluconate and iron (effervescent), manufactured by Burroughs Wellcome and Co., is intended for the treatment of combined dietary deficiency of the two elements. Each tabloid makes an effervescent draught containing 20 grains of calcium gluconate and three grains of iron and ammonium citrate. Deficiency of these elements is most likely to occur in childhood, pregnancy, and lactation, and the preparation provides a pleasant means for preventing such an occurrence.

VEGEMUCIN

Vegemucin (H. R. Napp Ltd.) is a combination of vegetable mucins intended for the treatment of gastric hyperacidity. Animal mucins in recent years have been shown to be effective in relieving the symptoms produced by hyperacidity. These suffer the disadvantages of being expensive and of being rapidly decomposed in the bowel. Certain vegetable mucins are not affected by the digestive ferments and pass through the bowel unchanged. Vegemucin is a combination of these substances. The mucins adsorb and thus neutralize free hydrochloric acid and furthermore provide a protective film on the gastric mucosa. The preparation is intended as an alternative to treatment with alkalis in heartburn, hyperacidity, and gastric and duodenal ulceration.

British Medical Journal

SATURDAY, DECEMBER 12th, 1936

A NATIONAL HEALTH SURVEY

The annual report of the Chief Medical Officer of the Ministry of Health, reviewed in part on another page, is the second to appear above the signature of Sir Arthur MacNalty, but it records his first complete year in that position. The report has the same general structure and style as the noteworthy series for which Sir George Newman was responsible, and it is difficult to see how it could be bettered. From a discussion on vital statistics it passes to epidemiology, and to the great preventive services of maternity and child welfare and national health insurance. Then come separate chapters devoted to cancer, to tuberculosis, and to rheumatic and venereal infections. The relation of food to health and disease calls for special treatment, and, finally, some outline is given of the work of the Medical Intelligence Section of the Ministry, the various researches which the Ministry encourages, and its contacts in the field of international health. A few subjects require increased consideration and others shrink in volume as the years go by. Fifteen pages now suffice for tuberculosis and about the same number for venereal diseases. On the other hand, cancer and maternal mortality bulk more largely because of public disquiet at the obstinacy of the figures, though as to maternal mortality the present report is more encouraging than its four immediate predecessors.

One problem that has come forward in recent reports is that of nutrition. An account is given now of the progress of the work of the Advisory Committee to the Ministry and the results already obtained. The account ends with the warning that while adequate nutrition is of importance in maintaining bodily resistance, it cannot be looked upon as a substitute for the control and precautions necessary in guarding against sources of infection and in dealing with the outbreak of infectious disease. A little historical reference shows that this work on nutrition is not entirely a new and wider interpretation of preventive medicine by the State and the local authorities. As long ago as 1863, before the days even of the Local Government Board, the Lords of Her Majesty's Council, who were the Central Health Authority, ordered an inquiry into the dietaries of the lowest-fed populations. The inquiry was made, on a sampling basis, by Dr. Edward Smith, and extended to some six hundred households. It was on approved scientific lines, and Dr. Smith even attempted to frame a minimum daily diet "to avert starvation diseases." Sir John Simon, Medical Officer to the Privy Council, in commenting on the report, remarked that "sensible improvements of the family feeding might be made if but the small economies of diet were understood." So much has been learned since then on the subject of diet that this early investigation has only historical interest, and the work is being pursued now with a co-operation of State and voluntary effort which no one could have foreseen in the middle of the last century.

The boundary between preventive and curative medicine is wearing thin. It is difficult to say of any section of this report that it relates wholly to one side or the other. The insurance medical service might be said, offhand, to be curative, but looked at in a different focus it appears as an essential part of preventive medicine. The fact that sixteen million people now have access to medical advice offers the best possible opportunity for the early detection and notification of conditions which menace the public health. It is with preventive medical services as it is with international affairs: the wars which the League of Nations has failed to avert are written large in recent history, the wars it has prevented have no record. Many people speak disparagingly of insurance practice; what they do not see is the enlargement of the bills of mortality and invalidism which would follow if the service were not in existence.

Generous acknowledgement is made in this report of the services of the clinician. Indeed, it is upon the work of such practitioners of the eighteenth century as Mead, Heberden, Fothergill, and others that the foundations of the administrative practice of modern preventive medicine were laid. At every turn the public health officer relies upon the family doctor. The notification of illness in any area rests with the general practitioner. In child welfare and maternity services the clinician works side by side with the hygienist. Sir Arthur MacNalty says that the Ministry of Health itself is greatly strengthened in its task by the help and advice it receives from representative bodies of the medical profession. The general practitioner can read this report with great satisfaction. Two special points may be brought to his notice. The report refers to the steadily growing interest of practitioners in post-graduate courses. Every year more practitioners devote a part of their hard-earned leisure to attending the refresher courses provided by many of the medical schools. The other point is a suggestion to the country practitioner. The Ministry believes that a rich source of information with regard to the common infectious diseases lies almost untapped in many rural areas. In urban areas the shifting nature of the population and other circumstances create difficulty, but the rural districts offer a field for the study of the natural history of these diseases. An example is quoted from a paper read last year to the Royal Society of Medicine by Dr. W. N. Pickles on the epidemiology of Wensleydale.[1]

[1] *British Medical Journal*, June 1st, 1935, p. 1137.

The Ministry appeals to general practitioners in rural districts to put on record some of the epidemiological observations made by them in their daily work, and offers the advice and assistance of its medical staff. This recognition by Whitehall of the value in the public health service of the private family practitioner is gratifying. Doubtless it is only a matter of time before it filters into every local health department. That many medical officers of health are co-operative in the highest degree we know well.

THE "SPINAL LESION" IN RHEUMATISM

It is nearly eighty years since Charcot advocated blistering the cervical spine in cases of rheumatoid arthritis, in the belief that the bilateral symmetrical wasting of the hands so frequently seen in this disease must be of central nervous origin. This suggestion led to more detailed study, and towards the end of the last century neurological problems connected with arthritis of the spine were the subject of contributions by von Bechterew,[1] Strümpell,[2] and Pierre Marie.[3] These observers found that not only muscle wasting but irritating sensory phenomena and occasionally anaesthesia might result ; and the intensity of these phenomena appeared to bear no direct relation to the severity of the local lesion. Thenceforward medical interest in the " rheumatic " group of diseases remained dormant, and a peculiar variety of the " spinal lesion " passed into almost undisputed possession of the osteopaths, to become with them the *causa causans* of all disease.

In 1933 Williams and Yglesias,[4] after investigating the lumbar spine in a large series of patients suffering with sciatica, were able to demonstrate, as a causative factor in many of these cases, a rupture of the nucleus pulposus which had led to subsequent collapse of the intervertebral disk between the fifth vertebra and the sacrum. This confirmed the work of Schmorl, who had demonstrated in the cadaver a subluxation of the articular facets with compression of the fifth lumbar nerve roots. In the following year the Royal College of Physicians Committee on Chronic Rheumatic Diseases was set up, and C. W. Buckley published a paper in its first volume of " Reports " analysing the neurological sequels of osteo-arthritis of the spine. Nachlas[5] described a syndrome of pseudo-angina pectoris originating from demonstrable changes in the cervical spine. Robert and Forestier,[6] in a recent radiological study of osteo-arthritis, have described the earliest demonstrable signs of this condition in the cervical spine as being a generalized thinning of the affected intervertebral disks with an increase in density. This narrowing of the disk, they suggest, increases bone trauma, more particularly round the margin of the vertebral bodies, and thus stimulates subsequent formation of osteophytes. They explain why such changes should tend to occur in the cervical spine, thus: osteo-arthritis is a disease primarily affecting weight-bearing joint surfaces ; the posterior articulations in the cervical area are obliquely placed and in the rest of the spine are vertical—this is the true localizing factor. They point out, moreover, that in advanced cases the shapes of the vertebral body may be sufficiently altered by osteophyte formation to allow of forward " subluxation " of the vertebrae directly above. They suggest, further, that this state of affairs might in certain cases prove to be the origin of unexplained pain in the region of the shoulders.

Hanflig,[7] in an article published this year, described thirty cases of pain in the shoulder-girdle, arm, and praecordium due directly to cervical arthritis ; Turner and Oppenheimer[8] have since studied a series of fifty cases in which there was complaint of pain in some part of the shoulder-girdle, arm, hand, neck, praecordium, or back over a period of four years. This pain was generally unilateral, and inability to perform actively certain normal movements of the upper extremity (among which they cite the Fascist salute) was common. They observed a demonstrable narrowing of one or more of the vertebral spaces and foramina, with or without other signs of arthritis, as a constant feature in this series. In a number of patients in whom the pain had, after a lapse of months or years, moved from one side to the other, they found a residual weakness of the muscles of the extremity first affected. A careful *x*-ray examination showed in some cases, in addition to the changes which have been mentioned, a deviation of the cervical axis caused by actual subluxation of one or more vertebrae, with narrowing of the neighbouring interspaces. Nearly all these patients had, as might be expected, drifted through the hands of numerous " healers," and they seem to have been fortunate in coming ultimately to the notice of the authors of this paper. The treatment adopted, with success in most instances, was traction of the neck, sometimes in conjunction with either deep *x* rays or short-wave diathermy. As a rule no pain was experienced in the neck itself, but where this occurred, or the original pain was exacerbated by the act of walking, much relief could be obtained by the use of soft rubber soles and heels.

It would appear likely from the study of the literature that the syndrome of a segmental neuritis originating in some demonstrable abnormality of the cervical vertebrae may be more common than is generally supposed, and it is obvious that *x*-ray examination of this part of the spine should always be made where such pain does not yield within a reasonable time to ordinary therapeutic measures.

[1] *Deut. Zeit. f. Nervenheilk.*, 1899, xv, 45.
[2] *Münch. med. Woch.*, 1888, 211.
[3] *Rev. de Méd.*, 1898, 285.
[4] *Journ. Bone and Joint Surg.*, 1933, xv, 579.
[5] *Journ. Amer. Med. Assoc.*, 1934, ciii, 323.
[6] *Journ. de Radiol. et de l'Electrol.*, 1936, xx, 469.
[7] *Journ. Amer. Med. Assoc.*, 1936, cvi, 523.
[8] *Ann. Int. Med.*, x, No. 4, 427.

HOW LONDON GROWS

The population of the County of London (as distinct from that of Greater London, which now spreads into half a dozen counties) is gradually declining. It was estimated in the middle of 1935 to be 4,185,200, a fall of nearly a quarter of a million from the figures of the last census. In the section of the Annual Report of the L.C.C. for 1935 which deals with public health[1] Sir Frederick Menzies, the county medical officer, discusses the ebb and flow of London population during the last ninety years. As the result of a rising birth rate and of immigration from the provinces the population of London steadily grew from less than two millions at the time of Queen Victoria's accession to over four and a half millions at the time of her Diamond Jubilee in 1897. Since then it has gradually declined. The rate of outflow from the county area was at its maximum during the first decade of the present century, though the increase in population of the outer ring of suburbs beyond the county boundaries was greatest in the period 1921–30, when, after the war, to the constant migration from Inner London was added the invasion of people from the depressed industrial districts of Northern England and South Wales. The movement outward, especially of married people with increasing families, may be dated from about 1881, and since then the migration has always been outward, until the population of the outer ring has grown to four millions. In other words, nearly half London is now beyond the county border. These movements of population, reflecting social changes, are full of interest—for forty years the pouring of people into the centre, and then for fifty years a migration outwards. This is still continuing, though even now there is a very large migration of people into Central London, especially of those between the ages of 15 and 25, who, no doubt in turn, when they marry and settle down, will join the outward trek. The term "County of London" is becoming a misnomer, and one foresees an administrative county of much larger circumference.

Whatever the migratory movements of the population may be the County of London becomes steadily healthier. One table in the report gives the death rates, per 1,000 living, since 1891. It is only necessary to compare the oldest and the latest figures.

	Average 1891–5	1935
Diphtheria	0.53	0.06
Scarlet fever	0.24	0.01
Whooping-cough ...	0.52	0.04
Influenza	0.41	0.11
Pulmonary tuberculosis	1.83	0.68
Other tuberculosis ...	0.80	0.09
Pneumonia	1.45	0.67
Bronchitis	2.45	0.36

The death rate from measles, which was 0.59 in the earlier quinquennium, was 0.09 for the years 1931–5, and in 1935 there were only nineteen deaths from measles in London. Comparable figures for heart disease are not available for the earlier period, but the mortality from this cause has gradually increased since 1901, as also the mortality from cancer and diabetes.

Maternal mortality, the most stubborn of figures, shows signs of yielding. The rate for 1935 in London was 2.58 per 1,000 live births, the lowest hitherto recorded, the previous lowest having been 2.76 in 1911. The actual number of deaths from puerperal fever was sixty-four, and from other puerperal causes, eighty. Two metropolitan boroughs, Stoke Newington and Bermondsey, had no maternal mortality, but the figures generally are so small that the rates for a single year and a single borough may be misleading. For example, the City of London shows the alarming rate of 6.7 per 1,000 mortality for the years 1928–35, but it is based on a negligible number of maternity cases, and only one woman died in childbirth in the City of London in 1935. One general conclusion is that the central and eastern areas, containing the poorest and most overcrowded populations, such as those of Finsbury, Shoreditch, Bethnal Green, and Stepney, show a lower maternal death rate than the average for London as a whole. Two other figures of social significance may be quoted: the birth rate per 1,000 living has fallen from 30.8 in 1891–95 to 13.3 in 1935, but the marriage rate in 1935 was higher than it has ever been in forty years.

[1] *Annual Report of the London County Council, 1935.* Vol iii (Part I). Public Health. P. S. King and Son, Ltd. 1936. (1s.)

THE INFLUENCE OF DRUGS ON BILIARY PAIN

A valuable piece of clinical research on the action of certain drugs on the emptying mechanism of the common bile duct has recently been carried out in the Mayo Clinic, and is now reported by W. L. Butsch, J. M. McGowan, and Waltman Walters.[1] The problem of the pain which in some cases recurs after cholecystectomy led the authors to pursue further studies of the pressures within the large bile ducts. They had previously demonstrated that pain is associated with an increase in pressure in the ducts, and the problem presented was the effect of various drugs on this pressure. Certain patients whose common bile ducts had been explored and drained consented to the investigation. The apparatus used consisted of a recording manometer and a reservoir connected with a tube from the common duct in such a way that the intrabiliary pressure and the perfusion pressure of the solution in the reservoir could be measured. A further method of studying the condition of the duct was by *x*-ray examination after the injection into it of an opaque oil. Some very interesting results have accrued from this investigation, the chief of which appear to be the effect of morphine and of glyceryl trinitrate. Even 1/6 grain of morphine injected subcutaneously caused a rise in intrabiliary pressure of from a normal level of 0 to 20 mm. to as much as 200 to 300 mm. of water. At the same time discomfort occurred in the form of epigastric tightness or fullness, or even an attack of biliary colic. The rise in duct pressure and the symptoms consequent upon it are the result of constriction of its lower end. On the other hand, glyceryl trinitrate and the inhalation

[1] *Surg., Gynecol. and Obstet.*, October, 1936, p. 451.

of amyl nitrite caused relaxation of the lower end of the duct and a fall of intrabiliary pressure. Contrary to what might have been thought by those who place reliance on certain so-called antispasmodic drugs such as atropine and hyoscine, these alkaloids had no effect on the spasm. As a result of this work it would appear advisable to avoid the post-operative use of morphine for patients who have had operations performed on the biliary tract, because the rise of pressure in the common duct produced by morphine may equal the secretory pressure in the liver cells and so further handicap a patient who may already have a seriously depleted liver reserve. Congratulations are due to those who have carried out this investigation, the results of which are of a practical character and directly applicable to man, since the experiments were made on man. This is a noteworthy contribution to clinical science.

BENZEDRINE

The compound benzedrine (phenylisopropylamine) possesses many properties of interest to the psychiatrist. It is a powerful stimulant to the higher portions of the central nervous system. It has been shown to be superior to ephedrine in the prevention of narcoleptic attacks, and has been tried in the treatment of various psychoneuroses and for the relief of fatigue. Recent observations on the effect of benzedrine on a group of mental cases[1] show that the drug causes a striking rise in blood pressure, together with a less marked action on the pressure of the spinal fluid. The drug also causes a rise in the red and white cell counts, due probably to constriction of the spleen. In general it acts as a stimulant of the sympathetic nervous system, and thus resembles ephedrine. Combination with atropine intensifies the effects produced by the drug. It is suggested that these results of its action, apart from the stimulation of the central nervous system, may prove of value in the treatment of shock and also in the treatment of spasms of plain muscle such as asthma and the various forms of colic.

THE ANAESTHETIST IN THE THEATRE

In the planning of the operating theatre it is natural to consider the needs of the surgeon first and those of the anaesthetist last. The anaesthetist's desiderata were discussed by Dr. George Edwards at a meeting of the Section of Anaesthetics of the Royal Society of Medicine on December 4th. The surgical ward and the theatre, he said, should be close together and on the same floor. Preliminary injections, not in all cases practicable or desirable, may obviate distress to the patient on his outward journey to the theatre. But in any event a long journey back makes it impossible to look after the patient properly, and the longer the journey the greater the risk of post-operative chest troubles. The arrangement of the theatre itself is a matter for the surgeon, but the anaesthetist might have something to say with regard to window lighting and to flooring ; the latter must be of some material that will rapidly disperse any static potential accumulating on trolleys and machines. An anaesthetizing room adjoining the theatre is essential and a recovery room desirable. Moreover the former should be devoted only to the induction of anaesthesia. It should not be used as a store place or cloak room, or as a passage between the theatre and the outer world of the hospital. In his approach to the theatre the patient should be disturbed as little as possible. In one London hospital, long overdue for rebuilding, the patient cannot be wheeled into the anaesthetizing room without passing doors through which all instruments have to be taken into the theatre from the sterilizing room. The one-way traffic system, easy with a single theatre, becomes more difficult when a row of theatres is built. A further point made by Dr. Edwards was that the anaesthetizing room, while as far away as possible from the sterilizing room, generally the source of much noise, should be immediately alongside the theatre and open directly into it. This makes it easier for him to attend to the anaesthetic apparatus while the patient is being wheeled into the theatre. The anaesthetizing room should be large enough to allow the patient's trolley to be turned completely round. The doors should be of heavy wood. Dr. Edwards prefers the double door of the ordinary hinge type to the sliding doors, which save space but are noisy. The walls should be thick enough to keep out all outside sounds, and, as far as possible, the service pipes should not be run in their thickness, for the hisses and gurglings that come from theatre walls are distracting to the anaesthetist and disturbing to the patient. The most comfortable light is a sky light, the patient during induction being in the horizontal position. The methods of ventilation and heating must be identical with those of the theatre proper. The recovery room should also be adjacent to the theatre, and form part of the one-way scheme of traffic. Here the patient may remain until his condition is such that he can be safely taken back to the ward. This arrangement has the advantage that the surgeon and anaesthetist, being still engaged in the theatre and anaesthetizing room, are within easy call in case of emergency. Dr. Edwards added that in describing all these arrangements he had been picturing the ideal. No anaesthetizing room he knew quite fulfilled it. Some were good and others very bad. Certainly it seemed to him that the anaesthetist, being required to move about and to deal first with a conscious patient and then with an unconscious one, and sometimes having to look after the two at once, deserved more consideration than he generally received.

CHILDREN'S MILK-DRINKING

An Inquiry into the Drinking Habits of Children of School Age, with Special Reference to Milk Drinking, is published by the Hannah Dairy Research Institute of Kirkhill, Ayr. When the so-called milk-in-schools scheme was first introduced in the autumn of 1934 no attempt had apparently been made to ascertain the existing milk-drinking habits of the children with a view to arriving at a basic figure from which to estimate the progress of the scheme. The object of the survey described in this publication is to remedy this omission, and it is intended that the survey shall be repeated after an interval of four or five years in order to determine whether in fact the milk-drinking habit has been influenced by the scheme. The scope of the inquiry covered nearly 14,000 school children, of whom two-

[1] *Amer. Journ Med. Sci.*, 1936, cxcii, 560.

thirds lived in Glasgow and one-third in rural and urban districts of Ayrshire, providing a representative sample of the child population in these areas. It is stated that the outstanding fact revealed by the survey was the small extent to which milk is normally drunk by children of school age. One-half of the children drank no milk whatever ; of the other half roughly two-thirds only took it once a day. Even in the purely rural areas not more than half the children were milk drinkers. On the other hand, only 5 per cent. of the children failed to take tea at least once daily, while 50 per cent. drank it three or more times in the day. Over ninety children took tea five times daily, a third of whom were under 10 years of age. Cocoa and coffee were comparatively neglected, while porridge, an excellent vehicle for milk, was only eaten regularly by one child in three. Although the milk-in-schools scheme had already practically doubled the frequency of milk drinking among children, there has been a disconcerting fall of late in the numbers, attributable to the wearing off of the feeling of novelty. This psychological reaction on the part of the children is borne out by experiments with milk flavoured by fruit syrups. This innovation resulted in an immediate increase of 44 per cent. in the number of bottles of milk sold. At the end of five weeks, however, the increase had fallen to a figure only 10 per cent. above the initial level. It is regarded as significant that the decrease in demand for milk under the scheme has taken place among those children who pay for their milk, the number receiving free milk showing a progressive increase. Dr. Wright, director of the Research Institute, maintains that a universal distribution of free milk to all children attending State-aided schools appears to be essential in order that the scheme may attain complete success.

HELP FOR THE BLIND

The work of the National Institute for the Blind is so manifold that it is hopeless to attempt to indicate in a brief notice what it does for the blind of this country and of the Empire. The facts of its work, and something of its romance also, can be gathered by reading the annual report for the past year.[1] Much is done for the blind in these days by all of us through the statutory authorities ; but beyond all that much still remains which can only be done by personal and voluntary contacts and effort if it is to be completely satisfactory and sympathetic in manner. That is the chief work of the National Institute for the Blind. Last year it spent some £205,000 on services to the blind ; of this £33,000 was derived from public grants, the rest, and that is the greater part of it, was given voluntarily by a generous public. If the Institute did nothing else than print and publish books and newspapers in Braille and Moon's types it would be justified in its existence and in its claim upon the charitable for support. Even in these days of wireless for the blind there are hours when their only resource and solace is reading ; and often it is through these books alone that the blind can gain some entry into the open world of the sighted. The blind musician suggests to our minds a sort of romantic conception of musical ability as a compensation for the loss of sight. But where would the blind organist be without the musical scores in the Braille notation furnished by the Institute and without its large lending library? Talking books are an experimental development—gramophone records of readings from noted works, which are being produced by the National Institute for the Blind in collaboration with the American Foundation for the Blind. Other sides of the Institute's work are to be found in the maintenance of sunshine homes for blind babies, of which there are three ; and a special school for blind and mentally defective children, while the " College for Girls with Little or No Sight " at Chorley Wood is worthy to rank with the best of our public schools. Now we learn that the responsibility for the continuance of the equivalent college for blind boys at Worcester falls upon the Institute. The development of massage in medical treatment has opened up a first-class field for blind workers. The Institute maintains a massage school for the training of the blind, and also the Alfred Eichholz Clinic and Institute of Massage and Physiotherapy, the staff of which are all blind. It is only two years since this clinic was established, but it is already a success ; its premises in Great Portland Street, London, are well worth a visit. These are a few only of the good works of the Institute which it does with the aid of men and women of generous heart.

[1] National Institute for the Blind. Annual Report, 1935-6. 222, Great Portland Street, W.1. (Pp. 48. 6d.)

THE TRANSMISSION OF CANCER

Authentic instances of the transmission of malignant disease from person to person are exceedingly rare. Balacesco and Tzovaru of Bucarest,[1] who record an example of this, also review earlier reports of such happenings, in most of which the evidence is far from convincing. Their cases were a mother with an ulcerating carcinoma of the breast and her infant with a sarcoma of the lower lip, the positions of the two growths exactly corresponding when the child was at the breast. Although so rare an occurrence that much stress cannot be laid on it, this apparent example of transmission is of some interest in that its mechanism is not easily explained. Animal cancers are readily transplantable, and the transplantation of living growth cells would presumably take effect in man, but here the growths are of so different a structure that the second to develop, which was that in the child, can hardly be regarded as derived from the actual cells of the first. It is true, as these authors point out, that experimental animal carcinoma sometimes undergoes sarcomatous transformation, but the change is a more gradual one than that which must have occurred here to explain the effect. This, like some other supposed examples of accidental transmission, suggests rather the existence of some contagium vivum, but it is perhaps scarcely profitable to allow ideas about the nature of cancer to rest in any degree on so slender a basis.

A report of the debate in the House of Lords on the Voluntary Euthanasia (Legalization) Bill, in which Lord Dawson and Lord Horder took a prominent part, will be found in our Parliamentary news at page 1232 this week.

[1] *Bull. Assoc. Français Cancer*, 1936, xxv, 655.

THE ENDOCRINES IN THEORY AND PRACTICE

This article is one of a series on Endocrinology contributed by invitation

PITUITARY TUMOURS

THEIR CLASSIFICATION AND TREATMENT

BY

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AND

N. M. DOTT, F.R.C.S.Ed.

From the clinical standpoint the term "pituitary tumours" is regarded as of regional rather than of histological significance. It embraces a variety of tumefactions of the pituitary region which cause symptoms indicative of glandular dysfunction, of chiasmal compression, and of hypothalamic derangement. For the purposes of differential diagnosis it is also necessary to include in our survey the regional effects of hydrocephalus. The regional group includes: (*a*) pituitary adenomas, (*b*) epidermoid pituitary tumours, (*c*) cysts of Rathke's pouch, (*d*) miscellaneous tumours of the neighbourhood, and (*e*) hydrocephalic distension of the third ventricle.

Anatomical Basis

There is a natural division into (*a*) tumours arising within the sella, and (*b*) tumours arising above the sella. The division is significant in relation to symptoms and also in respect of surgical management.

Tumours arising within the sella include the adenomas, a proportion of epidermoid tumours, and the cysts of Rathke's pouch. The earliest symptom (except for the secreting eosinophil adenoma and perhaps the basophil adenoma) is hypopituitarism, expressed as infantilism in the young and sexual inactivation in the adult. *X*-ray examination of the sella shows a typical globular distension. Next, as the tumour enlarges upwards bitemporal hemianopia is found, and finally somnolence and other signs of hypothalamic damage may supervene. The tumour is in intimate contact with the dural lining of the sella and is usually adherent to it. The dura cannot be surgically removed because of its relation to the cavernous sinuses and carotid arteries. Hence, although the gross bulk of an intrasellar tumour may be curetted away, it cannot be totally extirpated in a histological sense.

Tumours arising above the sella include a proportion of epidermoid tumours, rare adenomas from the pars tuberalis, meningiomas of this region, and the other miscellaneous tumours mentioned. The chronology of symptoms varies according to the exact site of origin. The suprasellar epidermoid tumours are apt to show hypothalamic symptoms first—adiposity, polyuria, somnolence, etc.—then chiasmal bitemporal hemianopia; and, lastly, signs of glandular compression. The sella turcica is affected late and shows erosion of its outstanding clinoid processes rather than distension of its cavity. The meningiomas of more anterior origin usually evoke signs of chiasmal and optic nerve compression first, and these may be the only symptoms discovered. Most suprasellar tumours are susceptible of complete surgical removal.

In general, pituitary tumours differ from the majority of intracranial growths in that, while they produce a well-defined group of local signs, they do not give rise to signs of general intracranial hypertension. They do not cause papilloedema, but simple primary optic atrophy. Hydrocephalus simulating a pituitary tumour, on the other hand, is usually associated with signs of hypertension and with papilloedema. These features assist in the differentiation of primary tumours of the pituitary region from hydrocephalus simulating such tumours. A rare exception to the rule is the epidermoid pituitary cyst which enlarges into the third ventricle and blocks the foramina of Monro. It thus causes hydrocephalus and papilloedema and other symptoms of hypertension. The observation of a calcified nodule above the sella in the *x*-ray film may provide the clue to the diagnosis, but in the absence of this clue only ventriculography can distinguish these third ventricle tumours from hydrocephalus due to more distant causes.

Endocrine Basis

There is a natural division of pituitary tumours according as they (*a*) produce a hormone themselves, and (*b*) act merely as inert masses compressing the normal gland and thus suppressing the secretion of the normal gland. In other words, they may be classified as those exhibiting pathological hyperpituitarism and those causing hypopituitarism.

In the first group—exhibiting pathological hyperpituitarism—we certainly place the eosinophil adenoma with its associated syndrome of acromegaly or gigantism. When we see a patient with acromegaly or gigantism we know that he harbours an eosinophil pituitary adenoma. It is believed that the basophil adenoma with its associated syndrome of vascular hypertension, obesity, and virilism may also represent a type of pathological hyperpituitarism. The disease is associated with significant changes in the suprarenal cortex also, and its relationship to the basophil adenoma does not appear to be quite constant. Some doubt therefore remains as to what should be regarded as the primary lesion, and as to whether it is essentially an expression of pathological hyperpituitarism. In both eosinophil and basophil adenomas the hyperplasia concerns only one of the three secreting cell types of the normal anterior and posterior lobes of the gland. While the hormone of the cell type concerned is produced in excess, the tumour damages the normal gland and suppresses its secretion. Thus, although the associated clinical syndromes reflect a hypersecretion of one element, they may also portray the concomitant suppression of the hormones of the remainder of the gland. Lastly, we must take into account tumours and other lesions of the hypothalamus and brain stem which interfere with the nervous secretory control of the gland. That such lesions may cause a functional hyperpituitarism is evidenced by their association with pubertas praecox and other evidences of hyperpituitarism.

In the second group—exhibiting hypopituitarism—are the chromophobe adenomas, epidermoid tumours and all the other miscellaneous tumours of the neighbourhood, and hydrocephalus causing pressure on the gland. Again we must bear in mind that lesions interfering with the secretory nerve supply to the gland may give rise to total or fractional hypopituitarism. Thus tumours or other lesions of the hypothalamus may cause diabetes insipidus, dwarfism, or sexual dystrophy singly or in combination.

It should be emphasized that with the rare exceptions of gliomas of the optic chiasm and of metastatic growths, tumours of the pituitary region are benign in character and hence offer a relatively favourable prognosis.

Treatment

The available means of treatment for pituitary tumours are surgical removal and, in certain instances, *x*-radiation. The indication for surgical intervention is usually a progressive impairment of vision from compression of the optic fibres at the chiasm, optic nerves, or tracts. These tumours rarely threaten life until very late in their course. Blindness is such a serious catastrophe, however, that the risks incidental to operation are fully justified in an attempt to avert it. Modern statistics indicate an operation risk to life varying from 5 to 10 per cent. Surgery is rarely resorted to in an attempt to combat endocrine disturbances. The most serious consequence of hypopituitarism in the adult is loss of sexual power, and removal of the tumour does not always restore gland function. Acromegaly, on the other hand, often runs a very slow and relatively benign course, hardly justifying the risks of operation in an attempt to stop its progress, unless vision is also threatened. In a few cases of rapidly progressive acromegaly, which may become very seriously disabling, surgical removal of the adenoma is probably justified in an attempt to arrest its progress.

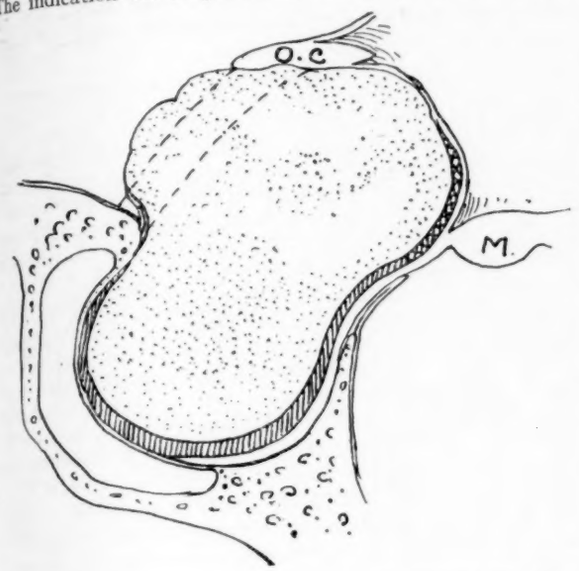

FIG. 1.—Typical intrasellar adenoma with upward extension. Note destruction of gland and compression of optic nerves and chiasm. O-C = optic chiasm. M = mammillary body.

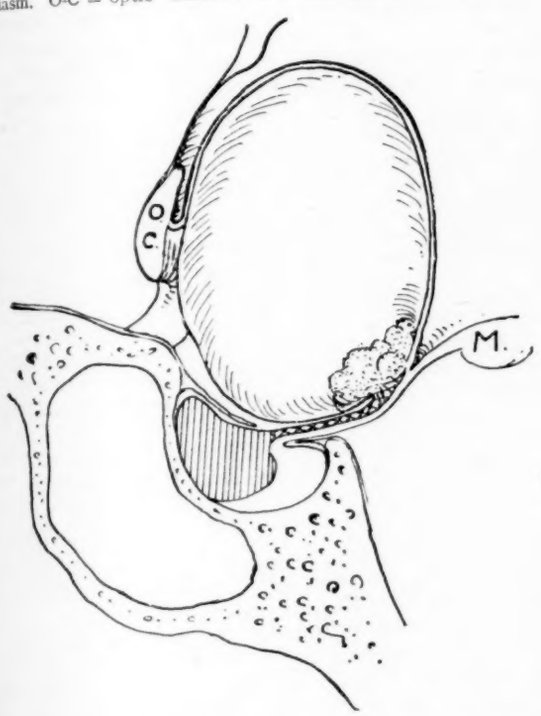

FIG. 2.—Typical suprasellar epidermoid cyst. Note hypothalamic distortion and secondary compression of optic chiasm and gland.

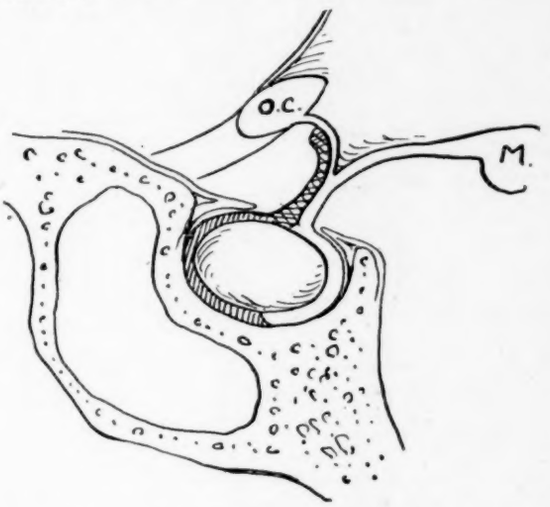

FIG. 3.—Rathke's pouch cyst. Note intraglandular situation and primary destruction of gland.

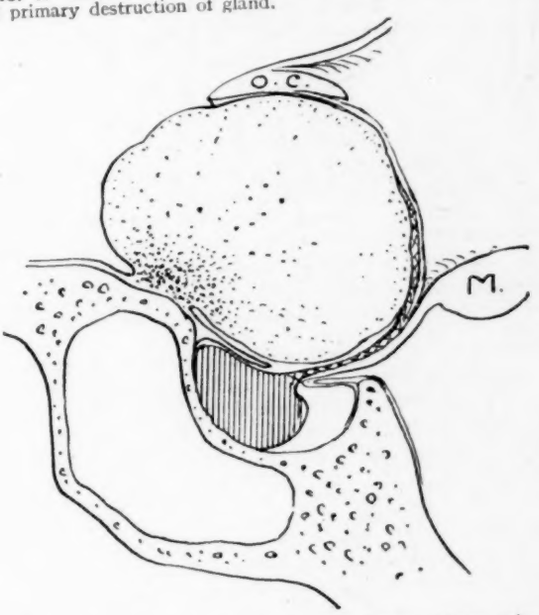

FIG. 4.—Meningioma of tuberculum sellae. Note primary distortion of optic nerves and chiasm and secondary compression of gland and hypothalamus.

Operative Measures

Most pituitary tumours are surgically exposed by reflecting an osteoplastic flap in the right or the left frontal region. The side with worse vision is usually selected, as it may be found advisable to sacrifice one optic nerve in order to secure better access and more complete removal of the tumour, thus adequately releasing and preserving the remaining nerve. The frontal lobe is gently lifted from the floor of the anterior fossa with a spatula until

the optic nerves and chiasm and the tumour in relation to them come into view. In the case of a cyst, it is evacuated and its collapsed wall gently withdrawn through the interval between the optic nerves. In the case of a solid tumour, its interior is carefully excavated until its remaining outer shell can be collapsed and withdrawn in the same manner as in treating a cyst. In this way room to work cleanly under visual control and without damaging retraction of surrounding structures is gained. Great care is exercised in avoiding damage to the tuberal region of the base of the brain. If a tumour is actually adherent to this region, the adherent portion must be left undisturbed, for laceration of the floor of the third ventricle is usually fatal from the acute hypothalamic disturbances it gives rise to. One anticipates a complete removal of most of the meningiomas of this region and of a proportion of the epidermoid cysts. Adenomas, as already indicated, can never be quite completely removed, and, knowing this, the operator should err on the side of

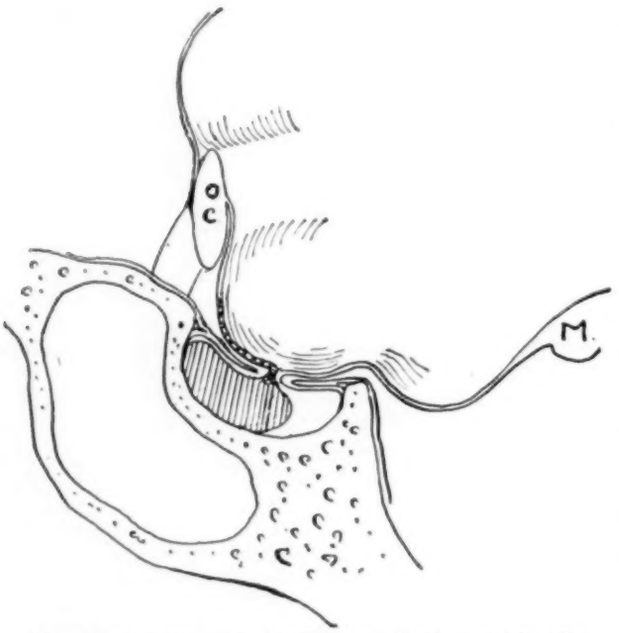

FIG. 5.—Hydocephalic distension of third ventricle. Note ballooning and thinning of the ventricular floor (hypothalamus) and secondary compression of gland and stretching of chiasm.

conservatism, and avoid carefully any risk of damage to surrounding structures, even at the expense of leaving a small proportion of the tumour untouched.

In some cases of obviously slowly-growing adenomas, especially those associated with acromegaly, the transsphenoidal operation gives excellent results. This procedure has fallen into rather undeserved neglect during recent years. The pendulum of progress has swung perhaps too far over to the intracranial procedure, as its technique has been improved and made safer. The transsphenoidal operation aims at removal of the bony floor of the sella turcica and subtotal removal of its contained adenoma. Since the tumour cannot be removed completely by any operation, and since the removal of the sellar floor permits any further growth of the remainder to enlarge harmlessly downwards into the sphenoidal cells, it provides very practical relief. This certainly is a less formidable operation than the intracranial procedure, and has fewer incidental risks. It is to be recommended for slowly growing adenomas, especially in subjects who are regarded as poor surgical risks. It is, of course, only applicable to primarily intrasellar adenomas, and is not to be applied to any type of suprasellar tumour, nor to any case where doubt exists as to the nature of the lesion.

Rarely a pituitary tumour may be accessible only by a transventricular approach. This is true of the epidermoid cysts which come to occupy the third ventricle. The frontal lobe is incised, giving access to the anterior horn of the lateral ventricle. The tumour is seen through the foramen of Monro. In the case of a cyst it may be evacuated and withdrawn through the foramen. If more access is required the columns of the fornix are cut across. No obvious disability results from this procedure.

Radiotherapy

The place of radiotherapy in the management of pituitary tumours is at present undetermined. Although it has not been strikingly successful in the past recent improvements in technique give promise of better results. Radiotherapy has no obvious effect on tumours other than the adenomas. At the present time we employ radiotherapy regularly as a sequel and adjuvant to subtotal surgical removal. We do so in the hope of averting or postponing recurrence of the tumour. It takes many years to assess the value of such a procedure, and a firm opinion cannot be expressed upon it at present. We also employ radiotherapy in the primary treatment of adenomas in which visual impairment is absent or very slight. Results in the past year suggest that this treatment may suffice, but we are prepared to resort to surgery if their visual impairment should progress. Here again experience of modern radiotherapy is much too limited and too short to warrant an expression of opinion on its real value.

Treatment of Certain Symptoms

Lastly we may refer to the special treatment of certain symptoms of pituitary tumours. Most cases of diabetes insipidus can be greatly benefited by the administration of pituitrin or pitressin. According to the severity of the polyuria 1/2 to 1 c.cm. of pituitrin may be given hypodermically twice daily. In milder cases a single dose at night may suffice to avoid undue disturbance of sleep incidental to frequent urination. Pituitrin may also be administered by means of an intranasal spray or in the form of snuff. The results may be quite satisfactory, though they are less reliable than with the hypodermic method. A minority of cases of diabetes insipidus fail to benefit at all from pituitrin treatment. Recently it has been found that partial or total thyroidectomy greatly diminishes the polyuria of diabetes insipidus, and the operation has been performed for a few intractable cases with success.

Diabetes mellitus may complicate acromegaly. The disease exhibits all the characters of true diabetes, and may end in diabetic coma. It may remain at a steady level for many months, or may show a conspicuous tendency to fluctuate. It reacts to dietetic and insulin treatment, just as true diabetes does, and should be treated on similar lines.

Sufferers from hypopituitarism may derive slight benefit from thyroid administration in rather small dosage. This tends to improve the symptoms which are attributable to their moderately depressed basal metabolic rate. At the present time no satisfactory pituitary substitution therapy is yet available to compensate for the major deficiencies of hypopituitarism—retardation of growth and sexual inactivation. One may assume, however, from the present state of knowledge of the hormones concerned, that their preparation in sufficient potency and purity for effective clinical administration is only a matter of time.

CONSISTENCY OF UNIVERSITY EXAMINATIONS

AN ANALYSIS OF SOME EDINBURGH MEDICAL RESULTS

BY

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(From the Department of Pathology, University of Edinburgh)

Considerable disquiet has been expressed of late as to the reliability of examinations as a guide to the ability of the candidate and his fitness for further study. The work of Hartog and Rhodes,[1] and to a lesser degree the results published by the Scottish Council for Research in Education[2] (both parties working on behalf of the International Examination Inquiry) certainly provide a sound basis for the doubts now so freely expressed.

On the other hand, the general impression of most of the more experienced examiners in the medical subjects in the University of Edinburgh (and no doubt elsewhere) is that, broadly, the examinations do give a pretty fair estimate of a student's capabilities, and that anomalies such as are disclosed by Hartog and Rhodes do not occur, or, if they do, only to such an extent as to be negligible.

While a full analysis on the lines of that carried out on behalf of the English Committee of the International Inquiry was not practicable, an investigation has been made into the correlation existing in a number of marks recorded in certain medical subjects.

Material Analysed

The material which forms the basis of this analysis consists of two series of marks.

(A) The marks obtained by candidates taking the six subjects which constitute the combined third-year class examination in the course for M.B., Ch.B. at Edinburgh University, for the six years 1929–30 to 1934–5 inclusive.

(B) The marks obtained in the various professional examinations by those candidates who took the combined examination for the first time in the two years 1931–2 and 1932–3. These two groups were chosen as including those candidates whose whole course would normally extend over the period covered by the first part of the analysis.

Since the third-year teaching and examining in Edinburgh University is arranged on a plan rather different from that obtaining in most other schools, it seems desirable, before considering the figures, to deal briefly with the methods employed.

Before the year 1928–9 the various third-year subjects were taught independently, and separate class examinations were held, on the results of which the candidate's right to sit for the third professional examination was judged. In 1928–9 an important modification was introduced, largely owing to the influence of the late Lorrain Smith. From that year onwards the systematic teaching in pathology, bacteriology, pharmacology, therapeutics, medicine, and surgery has been co-ordinated so that the student is, so far as possible, taught all aspects of a particular disease at the same time. For example, if in medicine the subject is valvular disease of the heart, then in pathology endocarditis will be dealt with, in bacteriology streptococci and the bacteriology of acute rheumatism, and in pharmacology and therapeutics the actions and uses of the digitalis group. The surgical element in cardiac disease being relatively unimportant, the surgeons would utilize this time to cover some purely surgical subject.

The examinations in connexion with this co-ordinated teaching are also co-ordinated and are held in spring and summer. At each period two papers are set, one of three hours and one of two hours. In each case the departments concerned are grouped together variously and share questions. For example, a question may be set asking for the pathology of pyelonephritis, the surgical treatment of renal calculus, and the bacteriology of urinary infections, while medicine and pharmacology and therapeutics might share a question on cardiac disease. Each part of the question is written in a separate book and marked by the department concerned.

The administration of the joint examination is carried out by each department in turn. Before each examination the heads of the six departments and the lecturer managing the examination for the current year meet to set the papers, and after each examination meet again to consider results. The marks attained by each candidate in each subject are set out in full on a schedule, and his claims to a "D.P." (certificate of having duly performed the work of the class which admits him to the professional examination) are considered jointly by the six examiners. In most cases, of course, there is little doubt one way or the other, but the borderline cases are fully considered. The general impression gained by all who have had to do with the joint examination is that a candidate's "form" from one subject to another is remarkably constant, much more so, indeed, than might be expected considering the diverse character of the subjects studied.

To confirm or correct the general impression of uniformity of performance, correlation coefficients have been calculated between each of the six subjects for each of the six years under review. The year of starting the scheme (1928–9) has been omitted for two main reasons. First, the scheme was in a tentative form, and secondly the records kept were not conveniently accessible. By taking six years the marks considered include one turn of administration for each department. Since in any one year there are a certain number of hitherto unsuccessful candidates repeating the course, and since the marks gained by them in their second or subsequent attempts are not comparable with those secured at a first try, only first attempt marks are included in the material. Only the marks of those who attended the whole of each examination have been taken.

The second part of the analysis is an attempt to assess the prognostic value of the combined examination, and to compare it with that of the preceding and succeeding professional examinations. From the students sitting the combined examination in the years 1931–2 and 1932–3, 231 were taken who had attended their entire medical course at Edinburgh University, and for whom, therefore, the marks were readily available. The figures taken were in all cases those of the first attempt at each examination, the marks in subsequent attempts being disregarded for the reason already considered. It is scarcely necessary to point out that the 231 students all sooner or later obtained pass marks in the earlier examinations, and the figures are therefore to some slight extent selected, since the very weakest or least persistent students tend to drop out and do not reach the final at all.

The figures correlated consist in the average mark secured in the respective examination taken as a whole. In the first professional examination are averaged written and oral (and/or practical) in each of botany, physics, chemistry, and zoology; in the second, written and oral (and/or practical) in physiology and anatomy; in the combined examination the average of written papers in pathology, bacteriology, pharmacology, therapeutics, medicine, and surgery; in the third professional, written and oral (and/or practical) in pathology (including bacteriology) and pharmacology (including therapeutics); in the final, written and oral in forensic medicine and public health (taken at the end of the fourth year but included in the final), midwifery (including gynaecology), medicine and surgery, together with clinical midwifery (including clinical gynaecology), clinical medicine, and clinical surgery.

Method

The correlation coefficients were calculated in the usual manner, but Sheppard's correction was not applied. In many cases there was high contact at one end only of the distribution and in a few at neither. For the

sake of uniformity it was thought better not to apply the correction in any of the cases. The actual distribution of the marks for the forming of the correlation tables was very greatly facilitated by the use of Paramount punched cards on which the various marks were entered at the outset. In the case of the correlations between the subjects of the combined examination, where the range of marks was fairly wide and the frequencies moderate, the figures were arranged in ten-mark groups. In the case of the professional and average combined marks in the second series, the averaging had evened out the irregularities and somewhat diminished the range. Moreover, a larger number of pairs were available, so that a five-mark grouping was found to be preferable.

Results

The results of the analysis are given in the following tables. Tables I to VI show the values of the correlation coefficient r between the six subjects of the combined third-year examination for the six years 1929–30 to 1934–5 respectively, along with the total frequency, N, for each year.

TABLE I.—*1929–30. N = 185*

	Pathology	Bacteriology	Pharmacology	Therapeutics	Medicine	Surgery
Pathology ...	—	0.64±0.03	0.43±0.04	0.37±0.04	0.48±0.04	0.53±0.04
Bacteriology ...	0.64±0.03	—	0.52±0.04	0.59±0.03	0.50±0.04	0.59±0.03
Pharmacology	0.43±0.04	0.52±0.04	—	0.60±0.03	0.50±0.04	0.42±0.04
Therapeutics	0.37±0.04	0.59±0.03	0.60±0.03	—	0.39±0.04	0.49±0.04
Medicine ...	0.48±0.04	0.50±0.04	0.50±0.04	0.39±0.04	—	0.49±0.04
Surgery ...	0.53±0.04	0.59±0.03	0.42±0.04	0.49±0.04	0.49±0.04	—

TABLE II.—*1930–1. N = 157*

	Pathology	Bacteriology	Pharmacology	Therapeutics	Medicine	Surgery
Pathology ...	—	0.45±0.04	0.48±0.04	0.38±0.05	0.57±0.04	0.45±0.04
Bacteriology ...	0.45±0.04	—	0.56±0.04	0.50±0.04	0.56±0.04	0.53±0.04
Pharmacology	0.48±0.04	0.56±0.04	—	0.63±0.03	0.61±0.03	0.54±0.04
Therapeutics	0.38±0.05	0.50±0.04	0.63±0.03	—	0.55±0.04	0.51±0.04
Medicine ...	0.57±0.04	0.56±0.04	0.61±0.03	0.55±0.04	—	0.50±0.04
Surgery ...	0.45±0.04	0.53±0.04	0.54±0.04	0.51±0.04	0.50±0.04	—

TABLE III.—*1931–2. N = 139*

	Pathology	Bacteriology	Pharmacology	Therapeutics	Medicine	Surgery
Pathology ...	—	0.42±0.05	0.57±0.04	0.60±0.04	0.51±0.04	0.38±0.05
Bacteriology ...	0.42±0.05	—	0.46±0.05	0.43±0.05	0.52±0.04	0.46±0.05
Pharmacology	0.57±0.04	0.46±0.05	—	0.55±0.04	0.53±0.04	0.53±0.04
Therapeutics	0.60±0.04	0.43±0.05	0.55±0.04	—	0.59±0.04	0.46±0.05
Medicine ...	0.51±0.04	0.52±0.04	0.53±0.04	0.59±0.04	—	0.58±0.04
Surgery ...	0.38±0.05	0.46±0.05	0.53±0.04	0.46±0.05	0.58±0.04	—

TABLE IV.—*1932–3. N = 184*

	Pathology	Bacteriology	Pharmacology	Therapeutics	Medicine	Surgery
Pathology ...	—	0.45±0.04	0.43±0.04	0.40±0.04	0.47±0.04	0.34±0.04
Bacteriology ...	0.45±0.04	—	0.52±0.04	0.34±0.04	0.45±0.04	0.32±0.04
Pharmacology	0.43±0.04	0.52±0.04	—	0.54±0.03	0.60±0.03	0.49±0.04
Therapeutics	0.40±0.04	0.34±0.04	0.54±0.03	—	0.51±0.04	0.42±0.04
Medicine ...	0.47±0.04	0.45±0.04	0.60±0.03	0.51±0.04	—	0.54±0.03
Surgery ...	0.34±0.04	0.32±0.04	0.49±0.04	0.42±0.04	0.54±0.03	—

TABLE V.—*1933–4. N = 186*

	Pathology	Bacteriology	Pharmacology	Therapeutics	Medicine	Surgery
Pathology ...	—	0.46±0.04	0.52±0.04	0.53±0.04	0.55±0.03	0.62±0.03
Bacteriology ...	0.46±0.04	—	0.46±0.04	0.40±0.04	0.45±0.04	0.48±0.04
Pharmacology	0.52±0.04	0.46±0.04	—	0.46±0.04	0.55±0.03	0.51±0.04
Therapeutics	0.53±0.04	0.40±0.04	0.46±0.04	—	0.55±0.03	0.55±0.03
Medicine ...	0.55±0.03	0.45±0.04	0.55±0.03	0.55±0.03	—	0.60±0.03
Surgery ...	0.62±0.03	0.48±0.04	0.51±0.04	0.55±0.03	0.60±0.03	—

TABLE VI.—*1934–5. N = 197*

	Pathology	Bacteriology	Pharmacology	Therapeutics	Medicine	Surgery
Pathology ...	—	0.32±0.04	0.35±0.04	0.52±0.03	0.43±0.04	0.25±0.04
Bacteriology ...	0.32±0.04	—	0.40±0.04	0.48±0.04	0.40±0.04	0.18±0.05
Pharmacology	0.36±0.04	0.40±0.04	—	0.45±0.04	0.46±0.04	0.27±0.04
Therapeutics	0.52±0.03	0.48±0.04	0.45±0.04	—	0.50±0.04	0.23±0.05
Medicine ...	0.43±0.04	0.40±0.04	0.46±0.04	0.50±0.04	—	0.43±0.04
Surgery ...	0.25±0.04	0.18±0.05	0.27±0.04	0.23±0.05	0.43±0.04	—

It will be seen that the values for r range round about + 0.5 for the first five years, dropping slightly for the sixth year to about + 0.4. Since the probable error attached to this last value is only about 0.04 it will be seen that a very significant correlation of high degree attaches to these figures. It should be noted that the probable errors are quoted for the coefficients not because they form the best guide to significance in the case of correlations but because they provide the readiest method of expressing it. The significance of the results has been checked both by the use of "t" and of "z," and the results do not differ materially from those obtained from the probable error. This is to be expected in view of the values of r obtained (not very close to 1.0) and of the fairly high total frequency.

The high values of r obtained indicate that the performance of the candidate, although judged in six different subjects, and in the case of most of these independently by three or four different examiners in each subject, remains very constant. It is straining probability too much to suggest that this constancy is due to all the examiners forming the same misjudgement of the candidate's abilities. The only alternative is that this examination does give a consistent estimate of the candidate's powers.

The remaining results illustrate the prognostic value of the examination. Table VII shows the correlation coefficients derived from the marks of the first, second, third, and final professional examinations, and the combined examination.

TABLE VII.—*1931–3. N = 231*

	Final	Combined
Final	—	0.66±0.02
Combined	0.66±0.02	—
First Professional	0.54±0.03	0.51±0.03
Second ,, ...	0.68±0.02	0.65±0.02
Third ,, ...	0.64±0.02	0.69±0.02

Excluding those for the first professional, the values for r range round about + 0.66 with a probable error in the neighbourhood of 0.02. The correlation is very high and very significant. The comparatively low values for the first professional (which are also really very high) are no doubt in part to be explained by the fact that at this early period the candidate has had relatively little practice in writing examinations, as well as that the non-medical character of the subjects not infrequently fails to arouse the serious attention of the student.

To those acquainted with statistics the results speak for themselves and need no discussion, but a brief consideration of one or two of the correlation tables yields some points of interest which should be equally plain to those with no great trust in statistical methods. Table VIII shows the arrays of marks secured in the final and in the combined examination.

TABLE VIII.—*Final*

Percentages		45-50	50-55	55-60	60-65	65-70	70-75	75-80	Total
Combined	30-35	1							1
	35-40	4	4	4					12
	40-45	2	9	12	1				24
	45-50		13	14	10				37
	50-55		9	33	28				70
	55-60		2	17	24	4	2		49
	60-65			3	14	6	2	1	26
	65-70		1	1	1	5	2		10
	70-75						2		2
Total ...		7	38	84	78	15	8	1	231

Taking the lower marks first it will be seen that of the thirteen candidates securing less than 40 per cent. in the combined, none reached an average of 60 per cent. in the final and only four secured from 55 per cent. to 59 per cent. Of the seven who obtained less than 50 per cent. in the final none had secured 45 per cent. in the combined and only two had reached 40 per cent. When it is pointed out that the pass mark is 40 per cent. in the combined and 50 per cent. in the final the agreement is even stronger. It must be remembered that in addition to the candidates here considered a certain number below 40 per cent. in the third year became discouraged and gave up. The agreement is even more striking at the upper end. Of the twenty-four candidates who attained the respectable figure of 65 per cent. and over in the final, none had secured less than 55 per cent. in the combined and only six had obtained less than 60 per cent. Moreover, out of the thirty-eight who reached 60 per cent. or over in the combined—that is, the group of really good students from the third-year point of view—only five obtained less than 60 per cent. in the final. Fifteen secured between 60 per cent. and 64 per cent., while eighteen secured 65 per cent. or more. It can thus be claimed that the result of the combined examination is a very fair guide to the candidate's chances in the final, be he strong or weak.

Table IX shows the arrays for the combined and for the third professional examination.

TABLE IX.—*Combined*

Percentages		30-35	35-40	40-45	45-50	50-55	55-60	60-65	65-70	70-75	Total
Third Professional	35-40				1						1
	40-45			4	2	2					8
	45-50	1	4	10	12	9	1				37
	50-55		8	8	12	25	5	1			60
	55-60			2	9	22	21	7	1		62
	60-65				1	11	19	15	5		51
	65-70						3	3	2		8
	70-75								1	1	2
	75-80								1	1	2
Total		1	12	24	37	70	49	26	10	2	231

The correspondence is high here also. Of the thirteen candidates who failed to secure 40 per cent. in the combined, only eight reached 50 per cent. in the professional and none reached 55 per cent. It must be remembered that some of these eight would have sat the combined a second time and so qualified to sit the professional. At the other end of the scale, of the twelve candidates who reached or exceeded 65 per cent. in the professional none had secured less than 55 per cent. in the combined and only three had failed to reach 60 per cent. Of the twelve candidates who secured 65 per cent. or more in the combined only one secured less than 60 per cent. in the professional and only six less than 65 per cent.

Considerations of space preclude a detailed analysis of all the correlation tables, but they show the same features in greater or smaller degree, as of course is implied in the high values of r.

Summary

1. Correlations have been calculated between the six subjects of the combined examination for each of six years—that is, for a total of 1,048 candidates. The correlation coefficient, r, ranges round about + 0.5 with a probable error of the order of 0.04, indicating a high degree of correspondence in the results.

2. Correlations have also been calculated between the final and other professional examinations, and the combined examination for a group of 231 students. The coefficients obtained range round about + 0.6, with probable error in the neighbourhood of 0.02, showing a very high degree of correspondence.

3. Study of the correlation tables reveals a high degree of correspondence between the results of the combined examination and of the third and final professional examinations at both the upper and the lower ends of the scale of marks.

4. From the results obtained the conclusion is justified that the examinations considered form a reliable guide to the students' academic capabilities.

My acknowledgements are due to the Dean and Faculty of Medicine of Edinburgh University for access to the marks forming the material for this investigation.

REFERENCES

[1] Hartog, P., and Rhodes, E. C.: *An Examination of Examinations*, second edition, 1936.

[2] Scottish Council for Research in Education: *The Prognostic Value of University Entrance Examinations in Scotland*, 1936.

L. Hill (*Journ. of Physiol.*, July, 1936, p. 45P) discusses the effect on the lungs of breathing through a narrow orifice. The difficulty of breathing through the narrow orifice of a short tube is increased by exposing the face to heat rays and is eased by the cooling effect of a fan. These effects are not psychological, but are more likely due to reflex narrowing of the air passages by heat and their opening by cooling. When the orifice of the tube is so small that a breaking-point in respiration soon occurs, the carbon dioxide content of the alveolar air is not notably increased, while the oxygen percentage is reduced to 9–10. When inhaling oxygen-enriched air through the breathing-tube, the alveolar oxygen percentage is raised to a high level, but the breaking-point is little extended, and the greater difficulty of breathing on exposure to heat rays and the easement on cooling the face remain. Breathing oxygen-enriched air before and not during the experiment prolongs the breaking-point. Making expiration free and obstructing only inspiration greatly reduces the difficulty of breathing. In explanation it is suggested that breathing through a narrow orifice greatly impedes the pulmonary circulation, and that owing to this and the consequent oxygen lack the respiratory centre fails. Breathing oxygen during the experiment helps little because the pulmonary circulation is impeded ; breathing oxygen beforehand helps because the blood and the respiratory centre are well supplied with oxygen in advance. When a free inspiration is taken before sampling the alveolar air, the alveolar air contains much less oxygen than normal, because the obstructed blood, when released to pass freely, takes up more oxygen than normally. Impedance of the pulmonary circulation must be of clinical importance in cases of obstructed breathing. The capacity to breathe through orifices of varying sizes can be used to assess fitness.

TUBERCULOUS INFECTION OF NURSES

MEMORANDUM BY JOINT TUBERCULOSIS COUNCIL

At a meeting of the Joint Tuberculosis Council on November 21st a report of a subcommittee on tuberculosis infection among nurses was considered. Before submitting its report the subcommittee had communicated with a large number of hospitals and sanatoria, and replies had been received from thirty-eight of these. It was perhaps unfortunate that most of the replies had come from special institutions for tuberculous patients, for in these special precautions are usually taken to which less attention would possibly be given than in general hospitals. Whether this is so or not, the replies did not modify the impression previously formed by the subcommittee that the risk of infection is likely to be higher in general hospitals which occasionally receive tuberculosis cases than in the special institutions.

Age of Entry of Probationers

Particular consideration was given to the age at which probationers are employed. The age at entry is usually 18 years, but a shortage of candidates has reduced this age to 17 in some areas. In view of the special susceptibility of adolescent females to develop pulmonary tuberculosis it was considered undesirable that young girls should be employed, and the recommendation was made that no probationer under the age of 18 years should be accepted for work in wards occupied by phthisical patients. It was, however, pointed out that the actual age limit was probably of much less importance than the degree of care given to the conditions under which young nurses work.

The hours of work at the institutions replying to the questionary varied from forty-eight to seventy-seven per week, the average for probationers being about sixty hours. This is somewhat longer than the period recommended by the College of Nursing.

Importance of X-Ray Examination

The importance of medical examination of nurses who are exposed to the risks of infection, both at the time of commencing work and subsequently, is obvious, but in only about half of the institutions does this include an *x*-ray examination. As radiography is the most important method of detecting incipient tuberculosis a skiagram at the time of a nurse's entry is insufficient. The Joint Tuberculosis Council recommends that *x*-ray examination should be repeated at least annually where nurses are serving tuberculous patients with open pulmonary lesions. In some sanatoria *x*-ray examination of the chest is a routine whenever malaise, lassitude, or cough indicates the possibility of early disease.

THE HEALTH OF THE ROYAL AIR FORCE

REPORT FOR 1935

The Report on the Health of the Royal Air Force for 1935[1] records a decrease in the incidence of sickness of 6 per 1,000, resulting in the lowest figure since the inception of these reports. The mortality rate shows an increase to 4.8 per 1,000, but this is chiefly attributable to the earthquake at Quetta, which was the cause of fifty-two deaths. As in previous years injuries constituted the principal cause of medical non-effectiveness, followed by gonorrhoea and infections of the upper air passages. The last-named group showed a marked increase, especially among the apprentices.

Diseases Abroad

The incidence of dysentery decreased from 17 per 1,000 in 1934 to 7 per 1,000 in 1935; this was chiefly accounted for by a decline in the number of cases at Hinaidi from 93 to 16. Despite a marked increase in the number of cases of malaria in Iraq, the total figures for this disease show a satisfactory diminution. There was a small outbreak of intestinal schistosomiasis, apparently the result of bathing in a stream—the Wadi Tiban—in the Aden hinterland. This is the first recorded instance of infection of Europeans with *Schistosoma mansoni* in Southern Arabia. Of a party of twelve R.A.F. personnel who bathed in this stream all subsequently showed a marked eosinophilia, and four were admitted to hospital with intermittent gastro-enteritis and mild fever; in only one case were the ova of *Schistosoma mansoni* actually discovered. A course of intravenous tartar emetic reduced the eosinophil count to normal within three or four months.

Transfer of Casualties by Air

During the year under review a total of 282 patients were evacuated by air in 164 flights over 46,995 miles, as compared with 173 patients in 122 flights over 28,516 miles in the previous year. These figures do not include those for India. On one occasion a naval rating requiring hospital treatment was transferred from a warship, operating in the Persian Gulf near the Elphinstone Inlet, to a flying boat, which transported him to the R.A.F. General Hospital at Hinaidi, a distance of 900 miles. In December the wireless operator of a survey party working at Masirah, Southern Arabia, was reported dangerously ill. A medical officer flew from Basra, a flight of approximately 1,050 miles, and the patient was successfully evacuated by air to the civil hospital at Muscat. Again, in the same month an outbreak of small-pox occurred at Sharjah, an Imperial Airways resthouse on the Persian Gulf. A medical officer was immediately despatched by air to vaccinate the employees of the company and to investigate the outbreak.

The Quetta Earthquake

Following the earthquake at Quetta aircraft were extensively employed to bring medical aid to the stricken area. During three weeks in June thirteen machines, operating from Risalpur, Peshawar, Kohat, Lahore, Ambala, and Karachi, conveyed to Quetta one complete medical unit, fifteen medical officers, eleven nurses, more than 12,000 lb. of medical stores and tinned food, 4,300 lb. of clothing, and large quantities of antitetanic serum. Eighty-eight adults and forty-eight children were evacuated by air from Quetta to Karachi, Lahore, and Risalpur. This number included three stretcher cases; the remainder were sitting cases, most of whom were suffering from minor injuries or shock. The report also alludes to a flight of unusual interest, when two aircraft conveyed a consignment of plague vaccine to Gilgit for delivery to Kashgar in Chinese Turkestan.

[1] London: H.M. Stationery Office. 1936. (2s.)

STUDENTSHIPS AND RESEARCH FELLOWSHIPS

The Medical Research Council announces that it has made the following awards of post-graduate studentships and research fellowships in clinical science and experimental pathology for the year 1936-7.

Post-Graduate Studentships: John Vivian Dacie, M.B., M.R.C.P., resident pathologist, King's College Hospital, London; James Hardman, M.B.Birm., F.R.C.S., clinical assistant in surgery, Royal Infirmary, Sheffield; Alan Robert Kelsall, B.Chir., late house-physician, St. Bartholomew's Hospital, London; Mrs. Freda Bury Pratt, M.D.Liverp., late assistant clinical pathologist, Elizabeth Garrett Anderson Hospital, London.

Research Fellowships: Leslie Ivan Mark Castleden, M.D., honorary medical tutor, British Post-Graduate Medical School, London; Denys Arthur Jennings, B.M., B.Ch., late house-physician, St. Thomas's Hospital, London; Miss Joyce Wright, B.M., B.Ch., late assistant bacteriologist, New Somerset Hospital, Capetown.

These studentships and fellowships are awarded for work in Great Britain on a whole-time basis; their objects are to encourage young British medical graduates of special ability and original mind towards becoming investigators in those branches of medical science which are concerned directly with disease as it occurs in human beings. The studentships are awarded for personal maintenance during a year's training in research methods under a suitable director, and the fellowships as probationary appointments for research on specific problems of disease.

THE STATE OF THE PUBLIC HEALTH

ANNUAL REPORT OF CHIEF MEDICAL OFFICER OF MINISTRY*

Sir Arthur MacNalty ends his Annual Report for 1935 with a saying from Epictetus:

"No great thing is created suddenly, any more than a bunch of grapes or a fig. If you tell me that you desire a fig, I answer you there must be time. Let it first blossom, then bear fruit, then ripen."

The progress in national health has been so rapid, the combating of many diseases so conclusive, that impatience is now expressed if further improvements do not become apparent with the same dramatic suddenness. It is not appreciated how many years of endeavour were spent in preparing for the triumph. Yet if the pace as marked in the present report is more pedestrian it is vigorous and in the right direction. In spite of the continuing effects of the world war and of economic depression, in spite too of increasing urbanization, the death rates, including the maternal and infant rates, are all lower, the notifications of nearly all the infectious diseases have further declined, small-pox has vanished, and the figures for tuberculosis reach a new low record. Only the mortality from cancer remains unyielding. It even rose last year from 1,563 per million living to 1,587.

Births and Deaths

The estimated population of England and Wales is just over 40,000,000. The number of births in 1935 was 598,756, a negligible increase on the previous year, and the number of deaths 477,401, again a negligible increase. The infant mortality rate fell to 57 per 1,000 births, the lowest on record, representing only half the figure which obtained thirty years ago. It is a point to be noted, however, that the deaths during the first four weeks of life have fallen less markedly than at other periods of the infant's year. Thirty years ago this figure was 41 per 1,000 births; it is now 30.

The principal causes of deaths at all ages were in the following order: diseases of the heart and circulatory system; malignant disease; bronchitis, pneumonia, and other respiratory diseases; diseases of the nervous system; and tuberculosis (all forms). If the working period of life be taken—that is, from ages 15 to 65—the causes are the same, but tuberculosis takes the third instead of the fifth place. Deaths from violence numbered 21,963 (two-thirds male and one-third female); suicide accounted for 5,223 of these deaths, and the sex incidence of suicide was again two-thirds male. Apparently deaths from road accidents are not considered to justify a special category; they are included under "other causes."

A study of these vital statistics suggests an ageing or at least a middle-ageing population. Out of every thousand people at the beginning of this century 520 were under 25 years of age, and the number now is 388. At the earlier period forty-seven out of the thousand were over 65; now that number is eighty-one. The reasons for the change are the fall in birth rate, which has reduced the proportion of young lives, and the fall in general death rate, which has increased the proportion in the older groups. Up to the present the improvement in infant mortality has compensated for the falling birth rate, but a point has been reached at which not much more improvement in infant mortality can be expected. By the middle of the century the population may attain its maximum and thereafter decline. It is even suggested how this "shape of things to come" may reflect itself in a redistribution of health services—fewer maternity and child welfare centres, more institutions for the aged.

*On the State of the Public Health. Annual Report of the Chief Medical Officer of the Ministry of Health for 1935. H.M. Stationery Office. (3s. 6d. net.)

Epidemiology

The infectious diseases which in 1935 loomed largest in the list of notifications were diphtheria (65,084) and scarlet fever (120,456). The deaths from these diseases were 3,488 and 573 respectively. There was a conspicuous fall in the deaths from measles, from 3,776 the previous year to 1,357, being the lowest death rate on record for that disease. In fact the principal infectious diseases showed no unusual or disquieting features. Influenza caused no anxiety, and the country was entirely free from small-pox. As for diphtheria and scarlet fever, which are endemic, and the source of much ill-health and expense, it is hoped that it may be possible to improve the machinery of control by the newer knowledge now accumulating. In scarlet fever the number of cases fluctuates from year to year without any indication of secular decline. The virulence has varied over irregular periods. Since the middle of the nineteenth century the phase of virulence has been one of continuous decline, but it is suggested that that ebb period may have reached its end, and that the tide has turned, for the death rate at ages under 15 years, which in 1931 was 45 per million, the lowest on record, has risen somewhat since then, and it may be of significance, too, that a high incidence of the disease among adults has been noticed in certain districts. With regard to diphtheria, facilities for artificial immunization are now available in about two-thirds of the county boroughs and in the great majority of the metropolitan boroughs, as well as in many smaller sanitary districts. A survey of the annual reports of medical officers of health indicates that a considerable number of children discontinue attendance before completing the course.

In measles the prevention or attenuation of individual cases in the course of an epidemic is now a comparatively simple matter. After a lapse of nearly two hundred years Francis Home's conception, when in Edinburgh he attempted the inoculation of measles in the hope of producing a mild attack of the disease, with consequent protection through later life, has been proved by modern standards to be practicable, safe, and efficacious. It is pointed out, however, that the doctor is entirely dependent on his patient for the remedy, as no commercial product has so far proved of equal value in prophylaxis or amelioration to the serum of a convalescent patient.

Maternal Deaths

In 1935 the maternal death rate was 4.11 per thousand live births, or 3.94 per thousand total births. This figure (with 1927 and 1931) is the lowest recorded since 1925, and compares with a rate of 4.6 in 1934. When the total number of births is taken—namely, close upon 600,000—the 2,457 mothers who died in childbirth seems a small figure, but the question is how many of the deaths might have been prevented, and the view of the Ministry is that the reduction in mortality, though welcome, is not enough. During the last two years specialist medical officers of the Ministry, in conjunction with the medical officers of health for a number of different areas of the country, have been investigating the causes of maternal deaths, and when this task is completed it is hoped that it will indicate further ways in which the maternity services can be made more efficient. One such means which soon became apparent is an efficient service of salaried midwives, and with this in view, without waiting for the completion of the investigation, the Midwives Bill was introduced last March.

The usual table is given showing the maternal mortality in the different administrative areas. Among the counties the "black" areas are again in Wales—Radnorshire with a rate of 10.14 per thousand total births, and Anglesey, with a rate of 9.51—while the lowest rates are in East Anglia (West Suffolk 1.38 and East Suffolk 2.29). London shows up very well in this picture, with a rate of 2.5, compared with 3.94 for the whole of England and Wales. Among the county boroughs the highest rates are in Lancashire (Warrington 10.68, Blackpool 8.39), but six boroughs, two of them in Lancashire, have rates

below 2—namely, Exeter, Carlisle, Bootle, Lincoln, Reading, and Rochdale. Bootle, by the way, with this low maternal death rate, has the highest live birth rate in the country—namely, 21.4 per thousand living—closely followed by its greater neighbour, Liverpool, with 20.3. The lowest birth rate is at the seaside towns, Blackpool, Bournemouth, Eastbourne, Southend-on-Sea, and Southport, and the Isle of Wight.

If abortion and post-abortive sepsis are excluded from the total puerperal mortality it is brought down from 3.94 to 3.37. The deaths attributed to or associated with abortion last year numbered 521, rather on the low side as compared with previous years. Mention is made of the British Medical Association Committee's report on the subject, published earlier in the year, as indicating that the practice of inducing abortion is a matter of growing concern to many medical and social observers in its bearing on the health of the nation.

The causes of death in 2,103 maternal cases in 1935 have been analysed as follows:

Sepsis	575	Anaesthesia	17
Haemorrhage	200	Ectopic gestation	48
Obstetric shock	159	Abortion	324
Toxaemia	258	Associated conditions (morbus cordis, renal disease, tuberculosis, etc.)	329
Accidents of labour ...	40		
Embolism	153		

In 1,731 of these cases the investigator was able to make a judgement as to any lack or inadequacy of essential services. He found such lack or inadequacy in 827, which he divided as follows (though the figures, of course, are not mutually exclusive): lack or inadequacy of ante-natal care, 388; of obstetric facilities, 248; of hospital or specialist treatment, 227; and of co-operation of patient or friends, 524.

The Insurance Medical Service

Reference is again made to the smoothness of the working of the insurance medical service. On a conservative estimate it is reckoned that in each year eight million insured persons seek medical advice and over fifty million attendances are given by doctors. Yet in 1936 only in 157 cases was it necessary to investigate a complaint respecting the adequacy of the service, and in only forty-eight of these were the facts held to justify the imposition of a penalty. Apart from this negative evidence, which by itself might merely mean indifference on the part of the insured public, there is ample positive testimony from competent observers to the success of the service:

> "The vast majority of insurance practitioners interpret the terms of their contract in no niggardly spirit, and undoubtedly the standard of service they give is not only high, but is yearly rising as fresh advances of medical science add to the general practitioner's armamentarium in diagnosis and treatment."

A "bull point" in connexion with the case—which by instruction of the Annual Panel Conference the Insurance Acts Committee is preparing—for a higher capitation fee!

The cost of prescribing is still mounting. The already high return for 1934 has been increased by one penny, making it 3s. 1d. per insured person, and representing an increase in money of about £70,000. If it were a uniform increase all over the country it could be better justified, but there are extraordinary divergencies as between area and area. The conclusion seems plain that in some areas insured persons have acquired the habit of medicine-drinking which the practitioners in those areas are reluctant to control. Manchester and Salford are again the greatest "sinners," the drug bill running to about 4s. 6d. per insured person. Yet comparable industrial areas like Middlesbrough, Darlington, Barnsley, and Dewsbury manage to keep the cost below half a crown.

The Ministry deplores unnecessary "physicking" of the population. At the same time it does not endorse Oliver Wendell Holmes's famous remark that if all the materia medica were sunk to the bottom of the sea it would be so much the better for mankind and so much the worse for the fishes.

> "All medical practitioners, especially those with experience of general practice, from time to time see the beneficial influence of drugs upon their patients; the soothing effect of a hypnotic upon torturing pain, the relief afforded to a laboured and oppressed chest by an expectorant or linctus, the balm to a diseased heart given by amyl nitrite or digitalis, the assuaging of severe gastric pain by bismuth and soda, and the salutary action of a brisk purge are instances that testify again and again to the value of medicinal therapy rightly applied to the appropriate case. . . . But intelligent prescribing is not synonymous with plural or poly-pharmacy, and all insurance practitioners should give due thought to their responsibility in this matter."

The increase in cost of prescribing is only to a small extent due to the prescribing of more costly preparations; mainly it is due to an increase in number of prescriptions.

The sections of the report on tuberculosis, cancer, venereal and rheumatic diseases, will be dealt with later.

ANNUAL CONGRESS OF RADIOLOGY

The tenth annual congress arranged by the British Institute of Radiology was held in the Central Hall, Westminster, from December 2nd to 4th, under the presidency of Professor J. A. CROWTHER. An exhibition of apparatus to which about twenty firms contributed was held concurrently.

Sir E. FARQUHAR BUZZARD, President of the British Medical Association, speaking at the inaugural proceedings, said how much he was impressed by the ingenuity and skill of the manufacturers. The exhibition brought home to him the very great developments which had taken place on this side of medicine since he himself entered the profession. He mentioned that it was to some extent the interest which Lord Nuffield had taken in *x*-ray cinematography as worked out by Dr. Russell Reynolds that had led him to establish the Nuffield Institute of Medical Research at Oxford, where there was an apparatus for this purpose which was, he supposed, one of the first of its kind. Sir Farquhar was convinced that *x*-ray cinematography had a large field, not only in ordinary clinical investigation, but also in research and teaching in anatomy, physiology, and ancillary fields. As for Lord Nuffield's most recent benefaction, he thought that it would bring together, in a way perhaps more easily achieved at Oxford than anywhere else, the clinical and laboratory side of medical research.

Bone Tumours

The congress was arranged in three symposiums: one, on bone tumours, another on anatomical variations of the alimentary tract, and the third, for physicists, on the measurement of ionization currents. Dr. J. F. BRAILSFORD opened the first of these. Radiology, he said, was viewed with scepticism by the conservative profession in many quarters, and it must be admitted that there was ground for the scepticism, because radiological reports often contained a bare statement of features alleged to be shown in radiographs which themselves had little merit. Radiology was practised by many who had not had the chance or taken the trouble to learn the normal anatomical features of the part. Most radiologists had received requests for advice on *x*-ray units for small hospitals to be operated by local practitioners, and "of course we only want it for simple things, like bones and joints; the others we shall send to you." He could not think that the interpretation of a radiograph of bone tumours was simple. The literature contained not a few instances in which the clinician had been led astray by erroneous radiological reports. The radiologist had his responsibilities and must not shelter under what had perhaps in the past been the domination of the clinician. In his report he must not merely draw attention to irregularities of outline, but from his special knowledge give his opinion of the nature of the pathological changes under-

lying the irregularities, and so guide the clinician as to subsequent treatment. With the demand for earlier diagnosis the difficulty of interpretation of radiographic appearances would increase. Once the quest for early signs began, innumerable indefinite signs would make their appearance, and only by constant watch could the significance of such changes be learned. Certain lesions presented the same characters at the beginning, but the ultimate development was widely different. Notwithstanding possible fallacies, radiology must be the first court of appeal in lesions of bone, for it was capable in the majority of instances of indicating the pathology long before the clinical appearances suggested it. Dr. Brailsford then discussed in detail the radiological appearances in osteoblastoma and angiomata.

Dr. R. E. ROBERTS gave a brief description of the *x*-ray picture in osteochondromata and bone cysts, endeavouring to correlate it with the underlying pathology. A simple osteochondroma was a tumour the radiological appearance of which depended largely on the relative proportions in it of opaque bone and translucent cartilage and fibrous and myxomatous tissue. Exostoses were benign osteochondromata found growing very near the ends of a long bone, and in the radiographs these tumours were shown as either sessile or pedunculated outgrowths from the bone on the diaphyseal side of the epiphyseal line.

Dr. Roberts gave what he described as a reasonable classification of bone cysts: simple cysts, fibrosis of bone, cysts in generalized diseases, and cysts which were in character chondromatous, traumatic (for example, in the carpal scaphoid), infective (for example, dental), developmental (for example, dentigerous), arthritic, hydatid, and myxomatous, also chronic fibrous osteomyelitis (fibroma). Radiologically the solitary bone cyst was as a rule an accidental discovery made during the course of an *x*-ray examination following trauma, which, though slight, might have resulted in a pathological fracture. The area usually affected was the upper end of the humerus, femur, or tibia, and the age of the patient usually under 21 years. In the radiograph the cyst was characterized by an area of translucency in the bone, surrounded by a smooth thinned cortex which usually showed expansion ; there might be some trabeculation in the translucent area.

The last contribution to this symposium was by Dr. H. M. WORTH, who discussed tumours of the jaw, the commonest of which, he said, were dental cysts. These occurred at all ages, and with equal frequency in the mandible and maxilla. They were derived from epithelial cells which were normally present in the periodontal membrane and which proliferated as a result of irritation from an infected tooth. A granuloma was formed which eventually showed liquefaction of the central cells. The peripheral cells continued to multiply and break down and a dental cyst resulted. The radiographic features were quite typical: an area of bone destruction, with no structure in the centre, but a clear and usually well-defined cortex. Some care was necessary in attempting to estimate the number of teeth involved in any particular cyst because the cyst might be superimposed over but not involve many teeth. The destruction of the lamina dura would indicate which teeth were involved. More than one cyst might be present in the same individual, and occasionally cases were encountered with a definite familial tendency to the production of dental cysts. Usually there was no difficulty in establishing the diagnosis of a dental cyst on radiographic evidence, but when the cyst was closely related to the antrum the difficulty might be very great. The differentiation of the cyst from the normal antrum was assisted by a number of small points—for example, the cortex of a cyst was usually more sharply defined and less wide than the antral wall ; the cyst outline was sometimes more of a true circle than the antral wall, and the presence of grooves for the transmission of vessels might be useful in establishing that the suspected area was not a cyst. Dr. Worth also touched on osteitis fibrosa, the radiographs of which revealed considerable new bone formation, with an appearance quite different from normal bone, a homogeneous density, and a stippled surface like the peel of an orange.

Anatomical Variations of the Alimentary Tract

This symposium, after a general introduction by Professor A. E. BARCLAY, was opened by Sir THOMAS DUNHILL, who discussed the oesophagus and thoracic stomach. He mentioned one case of short oesophagus with partial thoracic stomach which had been sent to him with the diagnosis of carcinoma. The patient happened to be a friend of his, and he knew that he had suffered for about five years from the same symptoms. Radiological examination showed nothing abnormal. The patient went to Australia, where *x*-ray photographs were taken, which again were forwarded to him with a suggestion that there was oesophageal carcinoma. Still he did not believe the diagnosis, and when his friend returned to this country he undertook an examination with barium, and the result showed clearly a short oesophagus and thoracic stomach. Since then he had seen about twenty-five patients with a similar condition. What was the evolution of such cases? An increase took place in the amount of the stomach which gradually found its way into the thorax, and then, as a result of retention of contents in the oesophagus, ulceration began above the narrowed stricture, with increasing dilatation. Passing from the short oesophagus to the condition in which the oesophagus was of normal length and the stomach herniated back into the thorax, Sir Thomas Dunhill said that not many such cases had been seen in England until recently, though many had been reported in the United States. On the whole, the diagnosis of abnormalities of the oesophagus and thoracic stomach was easy. It was missed in a certain number of cases because examination was carried out solely in the erect position.

Dr. R. BOULTON MYLES spoke on the stomach and duodenum within the abdominal cavity. These anatomical variations, he said, had not yet been put in their proper compartments so far as English textbooks were concerned. In the thorax they were for the most part congenital, and he thought the same might be said of anomalies of the colon, but in the abdomen there were variations of the stomach which were acquired in that they were the result of extrinsic abnormalities or lesions rather than developmental conditions of the viscus itself. The J-shaped stomach might be said to be normal in the average person, the transverse stomach was normally seen in the patient of stocky or obese build, and the long or hyposthenic stomach was perfectly normal in a long thin patient. With regard to the duodenum, there was very much less to be said on the question of anatomical variations, as the clinical significance of various small divergencies from the so-called normal was unknown. Alterations might occur in the position of the duodenum, its form and outline, and its mobility, and all these factors were dependent to a considerable extent on the habitus of the patient. In the most normal type of orthotonic patient the duodenal cap was placed a little above the centre of the duodenal loop, and the gastro-jejunal junction at about the same level as the upper angle of the duodenal cap. In speaking of diverticula of the duodenum Dr. Myles said that these exhibited the typical appearance of any diverticulum from the alimentary tract, being in the form of a smoothly rounded sac with clear-cut borders, situated close to the viscus, to which it was attached by a neck ; in most cases duodenal diverticula occurred singly, but occasionally there were two or three. Dr. Myles showed a large number of radiographs illustrating the various gastric and duodenal appearances.

Finally, Dr. S. C. SHANKS dealt with the appendix and the colon. The appendix, he said, being a vestigial structure, was subject to many anatomical variations in its length, its lumen, its position, and its mobility. The classical appearance of the appendix with a barium meal was that of a blind tube, 3 to 4 inches long, 2 to 4 mm. in calibre, and showing a gentle single or double curve. From this prototype there might be marked variation. Its length might be represented by a mere thread of barium, or the calibre might be 5 or 6 mm. Muscular tone and peristalsis might cause inconstant constrictions, which were to be differentiated from permanent strictures. With regard to the large intestine, Dr. Shanks discussed

anomalies of length, rotation, fixation, and size, and finally turned to congenital malformations of the rectum and anus, some of which were not susceptible to radiographic demonstration, the alimentary canal ending blindly. Theoretically two could be demonstrated: in the male the rectum opening into the urethra just below the uterus masculinus by a narrow channel through the prostate; in the female the rectum opening into the navicular fossa of the vulvar cleft, behind the vaginal orifice. He could, however, find no record of such demonstration.

Diagnosis and Treatment of Lung Carcinoma

The nineteenth Silvanus Thompson Memorial Lecture was delivered in connexion with the congress, the lecturer being Dr. A. C. CHRISTIE, president-elect of the fifth International Congress of Radiology, to be held in Chicago in 1937. His subject was the diagnosis and treatment of primary carcinoma of the lung.

Dr. Christie said that cancer of the lung was apparently increasing in incidence; it was increasing to a greater degree than cancer in other parts of the body. In the necropsies which revealed cancer in any situation, from 5 to 10 per cent. revealed it in the lung. The improvement in diagnostic methods, especially the introduction of bronchography and the later developments of bronchoscopy, had stimulated interest in the subject. Cancer of the lung was in every case bronchogenic cancer; it arose from the indifferent epithelium in the basal layer of the bronchial mucosa. Metastasis was a very important aspect of bronchogenic carcinoma; it was typical of the disease that it had a very high rate of metastasis, due, he supposed, to the circulation in the lung and the intimate connexion of that circulation with all parts of the body. In literature several cases of brain tumour which were found afterwards to be secondary to lung carcinoma had been recorded. Tumours secondary to cancer of the lung might also be found in the bones and even in the skin.

The first and most frequent symptom was a persistent cough, the next was pain in the chest, the third was dyspnoea, which might be only slight, and the fourth was haemoptysis. Any patient of cancer age with these four symptoms should be carefully examined. It was of vital importance that the general practitioner should recognize these early symptoms as warnings. The physical signs were of no importance at all; they were usually those of some complicating condition. The first and most important means of final diagnosis was radiological, but additional help was required in the great majority of cases, and a specimen must be obtained for biopsy. Dr. Christie discussed the differential diagnosis of lung carcinoma, contrasting the appearances in bronchiectasis, dermoid cyst, and tumours of the thymus gland.

Until recently the treatment of this disease was regarded as hopeless. The attitude was now one of hopeful expectancy, based upon a few cured cases. In several countries a few skilful and daring surgeons had demonstrated that the thoracic cage could be opened and the cancer removed. If the tumour was close to the bifurcation the surgeon had practically no chance of removing it. If the pleura was involved, again it was inoperable. Dr. Christie described one case of which he had knowledge. A woman whom he saw in 1928 had a bronchogenic carcinoma in the right main bronchus. The chest was opened and radiation directed against the tumour. The woman was still alive and well. The results of radiation in this field were encouraging enough to justify further trial. Radiation had no place as a pre-operative measure, but it appeared that it could be usefully directed through the open wound against the tumour. It also seemed to him that the intrathoracic application of *x* rays to the stump of the tumour might be ideally made by low-voltage (soft) *x* rays, involving no damage to the deeper structures.

The Mackenzie Davidson Memorial Lecture was also given during the congress, the subject being "High Velocity Positive Ions and their Application to the Transmutation of Atomic Nuclei and the Production of Artificial Radio-activity," by Mr. J. D. COCKROFT, F.R.S.

Reports of Societies

UNCOMPLICATED INGUINAL HERNIA

At a meeting of the Section of Surgery of the Royal Society of Medicine on December 2nd, Professor G. GREY TURNER presiding, the subject under discussion was the operative treatment of uncomplicated inguinal hernia.

Mr. GEOFFREY KEYNES said that this condition affected a large proportion of the population, especially the able-bodied, and therefore was of great economic importance. The term "uncomplicated" excluded chiefly the strangulated varieties. Perhaps many surgeons still had a certain degree of complacency as to the results of their operations, but in the old days almost no follow-up of patients was done, and nobody really knew how many were the recurrences, except the surgeon who worked for the City of London Truss Society. Having worked for eleven years with that society, and treated perhaps 10,000 patients for hernia, he had gained some insight into aspects of recurrence, and also into the kind of patient who in the past had been rejected as unsuitable for operation. The question was almost wholly one of surgical technique, and he was prepared to lay down the axiom that there was virtually no hernia that could not be cured by surgical operation. All the same, the treatment even of apparently the simplest hernias was not so easy as was commonly supposed. Complacency was seriously upset a few years ago when Mr. Max Page, at a meeting of the British Medical Association,[1] gave the result of investigations of a selected set of persons—policemen—and found the recurrence rate after operation for direct hernia 20 per cent. and for indirect 25 per cent. A recent paper in America on the injection treatment of reducible hernia, using the most approved methods and excluding patients in whom control of the hernia by a truss was difficult or impossible, showed 8 per cent. of recurrences.[2]

On the technical side of the question he believed that failure was due to two main things: in the first place to doing too much, and in the second to doing too little. Another important cause was incomplete diagnosis of the particular type of hernia before the operation was undertaken. The standard operation was Bassini's, or minor modifications of it. For a large category of patients, including children and young adults, to do Bassini's operation was to do too much. The only essential step in the operation in many of these cases was the removal of the hernial sac, and the less interference with the normal disposition of the musculature the better. Unnecessary sutures put through the internal oblique would only impair its function. In a great many of these patients the musculature was really unaffected, and when the sac was removed normal development would follow and no recurrence would take place.

With regard to the danger of doing too little, that was very much bound up with the possibility of incomplete diagnosis. The most important failure was failure to diagnose direct inguinal hernia. His observation of patients at the City of London Truss Society, where he treated between 400 and 500 patients who had had recurrences after operation by almost every surgeon in London, had led him to believe that a large proportion of these failures were due to an unsatisfactory treatment of direct inguinal hernias. He drew attention to another recent publication, "Direct Hernia: A Record of Surgical Failure," by Andrews and Bissell,[3] in which the average recurrence rate was given as 20 per cent., and the recurrence following Bassini's operation for direct inguinal hernia as 28 per cent. Direct inguinal hernia seemed to be much more frequent than was generally realized.

Operations for Direct Hernia

What was the remedy for this state of affairs? Mr. Keynes believed that an entirely different operation was

[1] *British Medical Journal*, 1934, ii, 896.
[2] *Journ. Amer. Med. Assoc.*, May 23rd, 1936, p. 1791.
[3] *Surg., Gynecol. and Obstet.*, 1934, lviii, 753.

always required for a direct hernia. If the Bassini procedure were attempted the internal oblique would be sutured to the inguinal ligament, and the area covered with two structures which were very unwilling to meet. An ordinary catgut approximation of these structures was obviously likely to fail. Something more complicated and difficult was required if anything like a high rate of success was to be attained. Mr. Keynes described in detail the plastic procedure which he followed. In this, instead of merely carrying out a catgut suture, he took a strip of fascia from the edge of the outer flap of the external oblique and, leaving it attached at the pubic spine, used it as a form of living suture. With that suture a complete approximation of the flap of aponeurosis which had been turned down, together with the rectus muscle if necessary, could be made from the pubic spine to the internal oblique, and provided a new floor for the whole of the inguinal canal.

Mr. Keynes gave figures for his operations for direct hernia during the last two years. Plastic operations using catgut had numbered sixteen, with two recurrences; plastic operations using fascia had numbered forty-five, with no recurrences; Gallie's technique, for the more extreme forms of direct hernia, had numbered thirty-three, with two recurrences. In indirect hernia the plastic operations had numbered fifty-five, and the operations with Gallie's technique thirty-five, so far with no recurrences. It was only by exercising judgement in the treatment of each patient individually that really satisfactory results could be attained. As for the choice of anaesthetic, a great many of these patients were chronic bronchitics with emphysema. It was important to avoid ether as an anaesthetic almost entirely. He had found by experience that even the largest hernias could be successfully treated under a local anaesthetic.

Provincial Experience

Mr. W. I. CUMBERLIDGE said that it seemed to him that the results from such an area as Leicester might offer a useful comparison with those from larger centres. From the beginning of 1932 to last September 1,345 operations were performed for uncomplicated inguinal hernia, with nine deaths. In five of the patients who died the only pathological finding was an ascending pyelonephritis. There was nothing in the notes of the previous examination of the case which indicated that this risk had been suspected, but it seemed worth while to bring it forward in considering operations in oldish men, many of whom had some prostatic obstruction. He had been accustomed in the past to carry out Bassini's operation. Ten years ago he began to use fascial suture in all direct and in a number of indirect hernias, and his confidence in this method had steadily increased. Out of the 1,345 cases the treatment consisted in 25 per cent. of simple removal of the sac, in 50 per cent. of Bassini's operation, and in 15 per cent. of Gallie's. The proportion of Gallie's to Bassini's had shown a tendency to drop of late years; it was now 1 to 36. Gallie's operation was a time-consuming process, and if a surgeon was confronted with a long operation list and a couple of hernias among them, unless he was convinced in his "bones" of the vast superiority of fascial sutures, he might content himself with the simpler and quicker method. Out of 848 cases of uncomplicated inguinal hernia which were followed up 594 were traced, and the position was quite satisfactory in 517. In sixty-eight cases there was recurrence or suspected recurrence, and on examining fifty-nine of these who attended for the purpose the recurrence was found to have followed Bassini's operation and to be of the direct type. But although there was recurrence many of these people had no serious disability.

Criticism of Bassini's Operation

Mr. W. H. OGILVIE said that this was the age of debunking, and so far that meeting had followed those lines. Inguinal hernia was the "dirty linen" of the surgical household, and it was high time it was washed, or at any rate well aired. There was no simple or standard operation in surgery to-day which was worse taught, worse performed, or on the whole less satisfactory in its results than the operation for inguinal hernia. The reason was that it was seldom taken seriously; it was commonly looked upon as a simple exercise in operative technique for beginners. In the many years he had been watching surgical demonstrations he had never seen inguinal hernia included in the list for visitors. In reality these operations were among the most difficult and important in the whole of surgery—the most important because they were the means, or should be the means, of returning an otherwise healthy man to full function. Mr. Ogilvie confined himself to Bassini's operation, because almost everybody was agreed that operative treatment of oblique inguinal hernia in children and young adults should have a cure rate of close on 100 per cent., and Mr. Keynes had made it clear that even the most colossal and long-standing hernia in old men of poor physique could be cured by operation of the proper type. Failures as seen in the out-patient department fell into three groups: (1) an oblique hernia recurring as such, due to some failure of technique, the original operator having either lost his bearings or having had to abandon his operation in the early stages; (2) a direct hernia recurring as a direct hernia; (3), and by far the commonest, a direct hernia recurring where an oblique was formerly recorded. Many men developed a direct hernia about the age of 40, and if an interval of more than five years had elapsed between the first operation and the appearance of the new defect he would be inclined to call it an accidental association, but when it followed within two years he thought it must be accepted as consequent upon an unsound surgical enterprise. Surgeons were all anatomists, but the anatomy of the living did not get nearly enough attention in surgery to-day.

The living anatomy of the inguinal canal showed that the whole business was simply a sphincter, and when it contained a hernia the first concern of the surgeon should be to decide whether the sphincter was competent or incompetent. It was his duty to remove the sac, but to leave the muscular defences which had to protect the canal in the future as little damaged as possible. He must so reconstruct the canal that these weakened muscles were spared a task with which they were unfitted to cope. Whenever he went into a theatre where an operation for hernia was being done it was always Bassini's. Whenever he corrected surgical papers he found every student saying "Bassini." Bassini's operation was pictured in every textbook. And whenever he found a recurrence among out-patients it was an inguinal hernia that had been completely "Bassini-ed!" In his opinion Bassini's operation was often a quite unnecessary mutilation of structures which were normal and should be beneficent. When the inguinal ring was stretched to a diameter of more than an inch, or when the muscles were feeble, a new defensive mechanism must be made to take the place of the sphincteric one which had failed, and the process was the formation of a strong sheath of tissue to replace the failed inguinal wall. A tough sheath could not be made from striated muscle. In his opinion Bassini's operation for a failed inguinal canal was plastic surgery misapplied, but those who opposed Bassini's operation found themselves regarded as attacking something as sacred as the Church of England or the Athenaeum, something established behind the ramparts of orthodoxy. It was an article of faith in this country that the foreigner, especially the operating foreigner, was usually right. Bassini undoubtedly was one of the great figures in surgery. He laid the foundations of all this work, but they were foundations on which there should have been subsequent building. He believed it a matter of prime surgical importance that the Bassini cult should be abolished, and if the present discussion had some effect in that direction it would do good. The surgeons present were old enough to have cast off other people's shackles, and some of them were too young to have formed their own. He begged them just to consult the records in their hospital of fifty patients on whom Bassini's operation was done between two and four years ago. One good thing

which would follow the abolition of this operation was that it would compel surgeons either to do less or to do more, according to the case, for, after all, the treatment of inguinal hernia fell into two groups—restitution or reconstruction—and there was no place for half-hearted interference.

General Discussion

Mr. C. C. HOLMAN gave an account of a follow-up of seventy-five cases after a lapse of two years ; there were five recurrences. His operation was of the Bassini type, but with some modifications. In the past he had treated quite a number—he thought with satisfactory results—with silver wire filigrees. In direct hernias he now used the fascial strip. Large hernias he personally never saw nowadays, but he supposed that if they were encountered Gallie's operation ought to be used. In children he did not operate, if he could avoid it, on a patient of less than 12 months. There was no upper age limit provided the patient was reasonably healthy. Dr. A. K. HENRY described a method of using a mid-line extraperitoneal approach for operating on uncomplicated hernia. This had been first suggested to him by his experience in a different field. In Egypt bilateral ureteric lesions were extremely common, and as a surgeon there he became familiar with the mid-line extraperitoneal approach, and recently he had learned methods of making the mid-line approach easier. Mr. PHILIP TURNER said that in simple hernia in a young patient, without any stretching of the muscles, all that had to be done was to remove the sac with the minimum amount of damage to the normal structures. One of the secrets of success in operations for inguinal hernia was to pay attention to the opening in the fascia. He agreed that Bassini's operation had become too standardized. It was generally accepted that one of the principles of a plastic operation was that like tissues should be replaced by like—that is to say, fascia by fascia. He had never liked the idea of taking flaps of fascia from the rectal sheath, because it had seemed to him that there must be some danger to other structures. For some time he had been repairing these openings in the fascia by a flap of fascia lata taken from the thigh. Professor A. W. SHEEN said that he was accustomed to teach that the operation for hernia must be " the sac, the whole sac, and nothing but the sac." He did not think one could get the top of the sac without cutting through the structures in front of it, one of which was the internal oblique, and therefore he thought it a good thing to cut through the internal oblique. The important thing was to get the whole sac away so that there was not the slightest dimple into which something might intrude from inside and make a new hernia.

Professor LAMBERT ROGERS said that his instincts rose against mutilating the sphincter in a healthy young adult ; the thing to do was to work out a compromise whereby, while preserving the sphincter, the sac was removed as entirely as possible. Mr. PHILIP MITCHINER said that there were only two operations for hernia. One was the simple removal of the sac as gently as possible, leaving the natural mechanism of the musculature of the inguinal region to prevent recurrence. The other, in cases where the musculature had become lax and atrophied, was the fascial graft. Mr. C. H. S. FRANKAU spoke of the importance of cleanliness of the tissues to be sutured. The absence of fat from such tissues was a very important factor in the success of a plastic operation. Mr. E. T. C. MILLIGAN said that the filigree operation had been practised for a long time at the Seamen's Hospital with successful results. There were recurrences at the lower end of the filigree, but these could always be cured by the insertion of another filigree. Mr. M. F. NICHOLLS stressed the future economic importance to the individual of dealing with simple hernias in infancy by removal of the sac. Many of the young adults who reported inguinal hernia would be found to have had the hernia in infancy. Mr. DE LISLE GREY spoke with approval of the injection method, by which, he said, patients could undoubtedly be cured. A patient who came to him five years ago with an inguinal hernia the size of a foetal head was treated by the injection method, and up to the present the result was quite satisfactory. Mr. LLOYD WILLIAMSON claimed to be a " doer of less or more." He had not done a single Bassini operation for uncomplicated hernia. In young people he removed the sac ; in other cases he did a fascial graft by the Gallie technique. Mr. H. J. McCURRICH asked whether it was really necessary in all these cases to remove the sac from the inguinal region. He had seen inguinal hernia merely treated by dividing the sac at its neck, suturing the sac, and leaving the portion in the canal where it was without disturbing it in any way.

The president (Professor GREY TURNER) did not think Bassini's operation deserved the complete condemnation it had received from some speakers. There was no operation which had given such good results in the hands of so many operators the world over, but it was sometimes not done with the attention which any operation of its importance demanded. It should be done as though it were not a minor operation but one of the most important in surgery. Mr. KEYNES mentioned that Lord Moynihan had stated that there was no operation he would rather have invented than Bassini's, and that in the aggregate few operations had done quite so much good. But obviously there was a feeling of dissatisfaction which had been voiced by several speakers. It was standardization that was the trouble. With regard to the filigree operation he had seen one patient who had had a filigree inserted with disastrous results. The good results claimed at the Seamen's Hospital might have some connexion with the fact that very often, from the nature of their employment, the patients were not seen by the hospital again.

PELVIC INCLINATION IN DYSTOCIA

A meeting of the North of England Obstetrical and Gynaecological Society was held in the University, Manchester, on October 30th, with the president, Dr. RUTH NICHOLSON, in the chair. Mr. PERCY MALPAS (Liverpool) read a paper on abnormal inclination of the pelvic brim as a factor in dystocia, which was based on a series of pregnancies in which apparent disproportion at term between the foetal head and pelvis was found to be due to an unduly high inclination of the pelvic inlet.

Mr. Malpas considered that recognition of the obstetrical significance of the angle of inclination of the brim had been tardy, since, apart from a paper by Caldwell and Jacobs and a reference to the subject by Theobald in a recent discussion at the Royal Society of Medicine, there had been little published on the subject. Hitherto interest in the pelvic inclination had centred upon its anthropological significance or its bearing on the methods of determining the true conjugate from the size of the diagonal conjugate. Lateral *x* ray pelvimetry and the lower segment Caesarean operation had afforded opportunities for assessing the effect that an abnormal inclination might have on labour. The angle of inclination of the brim was usually measured by determining the angle between the brim and the horizontal plane, but this angle was modified very much by posture ; such determination, moreover, took no account of the line of the lumbar spine, upon which much of the obstetrical importance of the inclination of the brim depended.

The preferable method of determining the inclination of the brim was to measure the angle between the plane of the brim and the front of the body of the fifth lumbar vertebra. In the gorilla the pelvic brim formed nearly a right angle with the horizontal, so that the pelvic inlet was almost directly backwards. This high inclination, however, was offset by a forward crouch of the lumbar spine, so that the angle between the brim and the body of the fifth lumbar vertebra was reduced to about 100 degrees, an angle which readily permitted correspondence to be established between the axes of the uterus and the plane of the brim. It might be termed the angle of " obstetric inclination " of the pelvis, in contrast with that between the brim and the horizontal, which might

be termed the angle of "postural inclination." The obstetric inclination varied with posture, but to a lesser extent than the "postural angle." The average measure would appear to be about 130 degrees, with a range of 10 to 20 degrees with posture, full flexion of the legs and spine reducing it to 120 degrees.

X-Ray Measurement

Accurate measurement was only possible by the use of *x* rays, but a guide to the inclination was furnished by the inclination of the external conjugate to the horizontal plane and the line of the lumbar spine. A high inclination of the external conjugate combined with a flattening of the normal lumbar curve would suggest a high obstetric inclination. The increased lordosis noted in many pregnant women indicated a postural compensation for the pelvic inclination. Seven cases of apparent disproportion at term were then described. Significant features were an unusually high brim inclination and that, although the head was freely movable above the brim at the onset of labour, measurement of the biparietal diameter of the foetal head immediately after delivery showed it to be smaller in each case than the true conjugate of the brim. In five cases the head did not engage after some hours of labour, and a lower segment Caesarean section was performed. In another case the first stage of labour was prolonged to forty hours, while the second stage lasted only one and a half hours. The child was stillborn. In the seventh case the *x*-ray film showed a marked lateral flexion of the foetal head on the spine. A living child was born by natural forces after a prolonged first stage.

Three cases were described in which small pelvic measurements were found in association with a relatively horizontal pelvic brim. In each case, despite an anticipation of dystocia, labour proceeded normally. The speaker said that a high inclination of the pelvis disturbed the normal correspondence between the axis of the inlet and that of the uterus, reducing the effective size of the true conjugate and modifying the mechanism of labour so as to produce posterior asynclitism or Litzmann's obliquity—a noticeable feature in those cases which came to section. This suggested that posterior asynclitism indicated failure to compensate the abnormal inclination. Lateral flexion of the foetal head upon the spine was one of the ways by which compensation was established ; it restored the normal synclitic relation between the head and the plane of the brim. The main problem in cases where high inclination was present was to restore correspondence between the axes of the uterus and brim. Theobald had recommended pulling the uterus forwards during the pains. Caldwell and Jacobs had advised full flexion of the thighs, which diminished the obstetric inclination. A somewhat similar position had been described by Smellie in 1766. Since the effect of a high inclination was manifested in the first stage of labour, uncomfortable postures were undesirable as leading to fatigue. A favourable posture in these cases would appear to be that spontaneously adopted by many women in the first stage of labour, the woman standing with the trunk leaning forward over a chair or the end of a bed, the arms or shoulders supporting the upper half of the body, and the abdomen free so as to allow the action of gravity on the uterus. Every pelvic brim had a characteristic inclination as well as a characteristic size and shape ; the angle of inclination should not be overlooked when the management of a case of apparent disproportion was being planned.

Mr. Malpas considered that a "trial labour" was most valuable, but in so far as the use of this term introduced the concept of unpredictable factors into obstetrics it was to be deprecated. It was the responsibility of obstetricians to eliminate as many unknown factors as possible. Some of the discredit into which pelvimetry had fallen, a discredit out of which the procedure of trial labour had developed, might have been due to concentration on the size only of the inlet, overlooking variations in inclination and shape. The present investigation had depended largely on the radiological work of Drs. R. E. Roberts and P. H. Whitaker.

Professor DOUGAL (Manchester) thought that an explanation was now afforded for certain cases where the head overlapped though the pelvic measurements were normal. Professor LEYLAND ROBINSON (Liverpool) drew attention to the fact that the pelvic inclination was greater than normal in the small round pelvis and less than normal in the flat pelvis—an additional reason why the former type of pelvis gave the more trouble. Professor MILES PHILLIPS (Sheffield) inquired as to the possibility of detecting alterations in the pelvic inclination clinically. Dr. GERRARD (Manchester) mentioned Jona's method in the estimation of relative size of head and pelvis, where the patient was made to sit up. It was noticeable that in many cases an apparent overlap was found to disappear, presumably owing to a lessening of the pelvic inclination.

Mr. MALPAS replied that the actual angle of inclination could only be determined by radiographs, but that an indication might be obtained when taking the external conjugate, particularly when the patient had a straight back.

Endometrioma Vulvae

Mr. T. N. A. JEFFCOATE (Liverpool) reported a case of this condition, which he considered rare ; he had only been able to find reference to six other cases in the literature.

A nulliparous nurse, aged 45, complained of a small tender swelling at the posterior aspect of the right labium majus. This became so painful immediately before menstruation that it necessitated her leaving duty ; she had also noticed a blood-stained discharge from the tumour during her periods. Menstruation had begun at 19, and had been regular (5/30) throughout. She had had excision of a right Bartholin's cyst in 1931. Slight pyrexia followed, but there had been little or no delay in healing. The operation was performed twelve days before menstruation under local anaesthesia. A month later an abscess appeared under the scar and was incised. Seven further abscesses developed in the ensuing six months, but were treated by fomentations. In May, 1932, an inflamed swelling had been aspirated, tincture of iodine being injected at the same time. In June, 1932, a gland and abscess had been excised. The incision was closed, but it suppurated and an open wound resulted. The patient began to menstruate two days after the operation. This wound had never healed completely, and always bled a little before menstruation. A small lump had appeared four months after the operation ; it was only obvious after menstruation, and gradually disappeared in four or five days. The patient first consulted Mr. Jeffcoate four and a half years later, her symptoms having been present during the whole of the intervening period.

Considerable scarring was then found at the posterior aspect of the right labium majus. Beneath this was a small hard tumour with a depression and reddening over it. The uterus was retroverted, but no other pelvic abnormality was palpable. The tumour was excised and showed small blue cysts ; one burst during the operation and discharged a small quantity of old blood. The incision had completely healed fifteen days after the operation, and there had been no return of symptoms. The specimen removed on the seventeenth day of the menstrual cycle was a roughly spherical tumour three-quarters of an inch in diameter, with two or three small cavities containing blood. Microscopical examination revealed typical endometrium in the interval phase, presenting the appearances of hyperplasia.

Mr. Jeffcoate thought that the tumour had undoubtedly arisen as the result of implantation of endometrium. It would appear that curetting had never been performed, and he believed that the endometrioma had developed from endometrial cells present in the menstrual blood. From the history it seemed most likely that implantation had occurred immediately after the third operation, since on that occasion the incision had broken down, completely exposing a large cavity, and menstruation had occurred within a few days of the operation. The case was deemed to be similar to those previously recorded in that implantation of endometrium from the menstrual or lochial discharge had been the mechanism of origin.

Ovarian Arrhenoblastoma

Professor D. DOUGAL (Manchester) reported a case of arrhenoblastoma of the ovary in a girl aged 18.

Menstruation had begun at 13, and continued every twenty-eight days with a normal four days' loss until 16½, when the periods ceased. The voice became deeper, and hair appeared on the face and other parts of the body, where it had not hitherto been present. She also developed acne, and was treated with *x* rays, but without benefit. About the same time her sella was radiographed, but with a negative result.

On examination he found her to be of average stature, but presenting well-marked male secondary sex characters. Her face had an unhealthy appearance due to acne, and hair was present on the cheeks, upper lip, and chin. The breasts were flattened and atrophic, the nipples shrunken, and several hairs were growing on the areolae. Hair was also present on the front of the chest, the anterior abdominal wall, and the anterior surfaces of the thighs and legs. The pubic hair was very abundant and of male distribution, extending upwards in the mid-line above the umbilicus and backwards over the perineal and anal regions. The general appearance of the body was masculine, there being little subcutaneous fat and no rounded contours. The external genitals were small, with the exception of the clitoris and prepuce, which were much hypertrophied and measured over an inch in length. The orifice of the vagina was extremely small, the vaginal canal narrow, and the body of the uterus definitely atrophic. No definite tumour could be made out in the renal or hypogastric regions, but it was noted on bimanual examination that the right ovary was somewhat enlarged. Since it appeared possible that this enlargement might be caused by a new growth, it was decided to examine the patient under an anaesthetic, but little more information was forthcoming. It was pointed out to the girl's parents that a very small tumour might be present in the ovary and that the abdomen should be explored, since the removal of such a tumour would probably result in a complete cure. On June 12th the abdomen was opened, and the right ovary was found to be enlarged to about the size of a walnut and fairly firm in consistence. The body of the uterus was definitely atrophic, but the other ovary appeared to be about normal in size. The right ovary was removed. The patient made an uninterrupted recovery, and during her three weeks in hospital there was a definite though not dramatic change in her appearance. She had a normal period on July 19th. Her complexion became much clearer, and there was less hair on the face, chest, and abdomen. The breasts were larger, and the clitoris was definitely smaller.

On October 28th there was still further improvement. Menstruation was quite regular every twenty-eight days, the duration being six days. There was definite increase in weight, and the contours of the body were becoming more rounded. The hair on the face had largely disappeared, and, although still present on the abdomen and thighs, was more scanty and of finer texture. The breasts were then well developed and firm. The clitoris was very little larger than normal, and the uterus appeared to have regained its proper size. The voice was still deep, but its tone was definitely higher than before the operation. (This point was demonstrated by gramophone records.) The patient was well satisfied with her progress and asked if she might marry. She said that she had been engaged for about three years, and stated that she had noticed no change in her feelings towards the opposite sex since the cessation of her menstrual periods.

The specimen removed consisted of the right ovary, enlarged to about the size of a walnut. On bisecting the organ the enlargement was seen to be due to a solid tumour of softish consistence and olive-green colour. The tumour was quite distinct from the ovarian tissue proper, which surrounded it in the form of a thin shell. Microscopical sections showed a richly cellular growth with a varied appearance in different parts of the tumour. In some places the cells were arranged in cords, in others the arrangement was trabecular, in others again it was diffuse and resembled sarcoma. Although the macroscopical appearance suggested the presence of fat, sections stained with Sudan III showed no evidence of this.

Professor Dougal said that the arrhenoblastoma was the masculinizing tumour. Like the granulosa-cell tumour and disgerminoma, it was believed to arise from rests of the primitive mesenchymal cells of the gonad. It was usually unilateral ; its malignancy, if any, was of a very low degree, so that in young women at any rate it was not necessary to remove the uterus and both ovaries. It was also extremely rare, only twenty-six cases having been published up to 1933. With the increasing interest in these special ovarian tumours, however, it seemed likely that many more would appear in the literature before long.

The case was discussed by several members of the society, and there was some difference of opinion as to whether or not the patient's voice had changed as a result of the removal of the tumour. The opinion was expressed by many that a change in the voice was hardly to be expected in view of the largely cartilaginous structure of the larynx. Cases had been reported, however, where it had definitely been stated that the voice had altered its character.

POLYCYTHAEMIA VERA

A meeting of the Devon and Exeter Medico-Chirurgical Society was held on November 19th, the president, Dr. A. HIPWELL, being in the chair. Dr. F. A. ROPER read notes on a case of polycythaemia vera occurring in a man aged 46, who was shown to the meeting.

Dr. Roper said that the case had been investigated for an enlargement of the spleen in 1923, although no information was to hand as to the findings at that date ; and but for an accident, which had caused him to consult Dr. R. Gray of Exeter, the patient's condition might have escaped diagnosis indefinitely. The man had made no complaint referable to the polycythaemia when examined by Dr. Gray, but when he appeared at the meeting he had the typical facies and a greatly enlarged spleen. Routine hospital investigation in November revealed a negative blood Wassermann reaction and a blood count as follows: haemoglobin, 130 per cent. ; red blood cells, 7,050,000 per c.mm. ; and white blood cells 14,900 (the differential white count showing polymorphonuclears 86 per cent., lymphocytes 11 per cent., eosinophils 2 per cent., and mononuclears 1 per cent.). There was slight anisocytosis of the red cells. Dr. Roper explained that this condition was the antithesis of megalocytic or pernicious anaemia, the latter being due to absence of the intrinsic factor in the gastric mucosa, whereas in polycythaemia vera there was an overdosage of the same. This having been established had indicated a diet restricted in accordance, and good results had been claimed for gastric lavage undertaken with like intent. Acetylphenylhydrazine had been the author's mainstay as regards treatment by drugs, but a small dosage of 0.1 gram was essential ; this was repeated twice or thrice daily by mouth until a total of 5 to 6 grams had been attained. Phenylhydrazine, if tolerated, never failed to reduce the number of the red cells. Benzol was dangerous, and might cause a lowering of white cells, leading to speedy dissolution. Dietetic control was advocated at first, then phenylhydrazine was given cautiously. Radiography of the long bones had been suggested, but Dr. Roper added that he had had no personal experience in this respect. In the present case the outstanding feature was the enormous spleen, the red cells being only moderately increased, whereas amongst five other cases which had come under his notice the highest count had been 12,000,000.

Dr. C. R. WROTH stated that in his experience *x*-ray treatment in this affection, whether applied to the spleen or the long bones, had given him no encouragement. Dr. L. N. JACKSON asked if cases of polycythaemia could be grouped as blood donors. Dr. C. J. FULLER sounded a note of caution as to treatment with phenylhydrazine. He quoted a case where a condition had resulted sufficient to cause grave apprehension for a time to those concerned. It must be remembered that the red cells had a habit of continuing to drop numerically after the removal of the drug.

Dr. ROPER replied that patients with polycythaemia were certainly groupable as blood donors. He agreed with

Dr. Fuller as to the care needed in treatment with phenylhydrazine; small individual doses and withdrawal when the total of the injections reached was 6 grams were the cardinal precepts for guidance.

Carcinoma Coli with Gall-stones

Mr. R. WAYLAND SMITH and Dr. C. R. WROTH reported a case, illustrated with *x*-ray films, of a married woman aged 69 who had been proved to have a malignant growth of the colon coincident with gall-stones. There had been a history of intermittent vomiting and pain in the right hypochondrium, but not associated with jaundice. She had lost weight in spite of retaining a good appetite. The bowels had acted regularly until just before admission, and constipation had then responded well to an enema. There was localized tenderness over the gall-bladder, but this viscus could not be palpated, nor could any tumour be made out anywhere in the abdomen. On the morning of admission, however, Dr. Bush (who was referring her for treatment) had noted a palpable contraction of the ascending colon. Simple radiography revealed gall-stones, and a barium meal indicated an obstruction in the transverse colon near the hepatic flexure. Reviewing the plain film, the growth was found to have been demonstrated by the presence of a distal bubble of gas. Exploration disclosed a ring carcinoma at this site; it was mobilized, and removed by a Paul-Mikulicz operation. The lumen of the bowel at the site of the growth was reduced to a quarter of an inch in diameter. The interest in this case lay in the two unconnected abdominal conditions, the first of which seemed to be responsible for the signs and symptoms discovered up to the morning when she was to be admitted to hospital. The adipose abdominal walls would have in any case obscured observation for visible peristalsis, but the very definite localized contraction noted by Dr. Bush on that morning (and an isolated clinical finding in spite of repeated examinations) led to further consideration of the plain film.

Dr. C. R. WROTH, commenting on this case, referred to the amount of time and care that was entailed in an *x*-ray investigation before a negative verdict could be accepted with any assurance. It was not infrequently found, for instance, that careful observation during screening would indicate the presence of an ulcer or a growth which otherwise would have escaped notice with the barium meal, owing probably to some change in position having taken place between these two phases of the examination.

INCOMPLETE PNEUMOTHORAX

At an ordinary meeting of the Manchester Medical Society held on November 4th Dr. G. MAURER (Davos Platz) delivered an address on the treatment of the incomplete pneumothorax.

Dr. Maurer said that pulmonary tuberculosis was arrested in 30 to 50 per cent. of cases after artificial pneumothorax treatment. The percentage of arrests obtained was small when the pneumothorax had been incomplete. The disease in the lung under the base of the adhesion did not heal, and reactivation occurred here when the artificial pneumothorax was let out. Incomplete pneumothorax was not only ineffective but dangerous—effusion, tuberculous empyema, perforation, mixed empyema, and dissemination of the disease being frequent sequelae. In numerous forms of adhesion pneumothorax fell into three main groups. In Group I the strands were not thicker than a finger, and membranes with a peripheral fibrous zone were at least one centimetre long. These should be divided with the galvano-cautery after the method of Jacobeus. In Group II there were adhesions of thumb to wrist thickness with tenting of the parietal pleura, showing that the lung did not directly join the chest wall. Such adhesions were enucleated from the chest wall with the galvano-cautery after preliminary coagulation with diathermy to prevent haemorrhage. When the pleura was divided the interior of the adhesion usually consisted of loose areolar tissue, which could be separated from the parietes by blunt dissection. In some cases it was formed of dense fibrous tissue, the result of previous inflammation, which must be divided by alternate applications of diathermy and galvano-cautery. In others the inflammation was recent and acute, and operation should be abandoned because of the risk of mobilizing tubercle bacilli.

In Group III there were direct synechiae between varying areas of lung and the chest wall. Unless the collapse was selective the useless and dangerous artificial pneumothorax should be abandoned. In selected cases it might be combined or replaced by diaphragmatic paralysis, but if the nature of the disease and the state of the other lung permitted thoracoplasty was usually the operation of choice.

New Zealand

[FROM OUR CORRESPONDENT IN WELLINGTON]

A Surgeon's Liability

Whether a doctor is vicariously liable for injuries suffered by a patient in an operating theatre through the negligence of a nurse was the important issue decided in a judgement by the Court of Appeal, which held that a patient so injured was not entitled to recover from the doctor. The case was a Dunedin one, in which the body of a woman had been burned through being painted with iodized phenol instead of tincture of iodine, and was stated for the opinion of the court by Mr. Justice Kennedy. The court consisted of the Acting Chief Justice (Sir John Reed), Mr. Justice Ostler, Mr. Justice Blair, Mr. Justice Kennedy, and Mr. Justice Callan.

Mrs. Isabel Daisy Ingram of Dunedin claimed £700 damages in the Supreme Court from Dr. Henry Walden Fitzgerald of Dunedin, who was engaged to perform a double abdominal operation in a private hospital in David Street. The accident occurred on October 29th, 1932, the day after the patient's admission.

The judgement of the Court of Appeal contained the following passages.

APPEAL COURT'S JUDGEMENT

"The defendant discovered the nurse's error very soon after it had occurred and took prompt measures. It was explicitly admitted that the defendant was not personally negligent, and it is, for the purposes of the present argument, to be taken as a fact that the plaintiff was, through the negligence of a nurse, painted with iodized phenol instead of with tincture of iodine.

"The ground upon which it was submitted that the defendant was responsible was that he had the right or power to control the nurses in the operating theatre, and that they were his servants and that he must answer for their negligence on the principle of *respondeat superior*. No case was cited in which, in the precise circumstances of this case, it had been held that the operating surgeon was the master and the nurses his servants. The submissions in this case do seem to impose an intolerable burden upon the surgeon; for, if rightly founded, they would impose on him the legal responsibility for negligence in the theatre, even though he himself had exercised all possible care and even though it was wholly impossible for him to guard against or prevent the damage.

"The proper answer to be given will appear if we ask, What in the circumstances did the defendant really undertake to do and what was it that was negligently done? Was the negligent act done by some person put into the surgeon's place to do an act which he had intended to have done as for himself, or was the negligent act done by an independent collaborator upon whom he was entitled to rely?

"Under the conditions of modern surgery it is impossible for a surgeon himself to do the whole work involved in an abdominal operation, and he is consulting not his own convenience, but the interests of the patient in following the usual course of having the work done by what is termed 'a team.' The operating surgeon, in truth, can only do part of the work, and, if an operation is to be completed quickly, the surgeon must be able to rely upon certain work being done by others, and such is the well-established practice. Thus the preliminary painting, the preparation in the theatre,

the sterilizing of the instruments, and the final painting are generally performed by the nurses. The theatre sister and the assistant nurses are supplied by the private hospital where the operation is performed, and they have thus independent duties to carry out. In the circumstances of this case we think the proper inference is that the defendant did not undertake personally to do all the work necessarily involved in the operation, including the preliminary painting, changing the position of the patient in the theatre, and the painting prior to the second operation. He must rather have undertaken to perform the operation in the hospital selected and with the appliances there available, and with the assistance and co-operation of qualified, competent, and experienced nurses attached thereto. It is true that he was in supreme control, and that he had the right and the duty to intervene, and could do so. But those subject to that control were skilled collaborators with independent duties, and he did not find it necessary, nor would he expect to find it necessary, to intervene to direct the manner in which they discharged those duties.

"They were not his delegates in the sense that they were there to do work which he had contracted to do or to have done. They were, for general purposes, the servants of the hospital, but in the theatre they were subject to his directions. In no sense, then, is it a proper inference from the facts that the doctor undertook personally to carry out that part of an operation which, in practice, falls to the nurses. There was no delegation, then, in the ordinary sense, for he did not intend, and could not be taken to have assumed, to do their work or to have it done. He undertook to do his part in the operation with reasonable care and skill, and it is consistent with the explicit admission made that fulfilling his duty of care he might leave the duty of painting and preparation to the nurses supplied by the hospital for that and other purposes.

"The nurse, therefore, discharging the duty of painting was not his servant nor in a position analogous to that of a servant doing work as his servant or agent, and he is accordingly not vicariously liable for her negligence.

"It has long been recognized that certain work may be left to nurses without responsibility necessarily attaching to the surgeon for their acts."

Judgement was entered for the defendant in the Supreme Court.

France

[FROM OUR CORRESPONDENT IN PARIS]

Aetiology and Treatment of Enuresis

The twenty-third session of the Assemblée Française de Médecine Générale, at the Hôtel-Dieu in Paris, under the chairmanship of Professor Carnot, dealt with the aetiology and treatment of enuresis. It should perhaps be recalled that this medical body is representative of the talent of men in general medical practice rather than of the consultants and teachers in high places in Paris. Dr. Henri Godlewski, the founder of this body, has summarized the opinions expressed on this occasion by the speakers representative of all parts of the country. They have come to the conclusion that every attempt to cure enuresis should be based on psychotherapy, and that the part played by anatomical factors, such as spina bifida, has been much exaggerated. Nocturnal enuresis exists in two forms: there is the mild form which is the more common and which always ends in recovery, and there is the severe form which is rare and refractory to treatment. Enuresis should be regarded as a functional ailment occurring not infrequently in families with a history of alcoholism and tuberculosis. Congenital syphilis is probably a factor of less importance. Much can be done to prevent this trouble by the prophylactic education of the functions of the bladder. The child must learn early how to become sphincter-minded. At the banquet following this meeting Georges Duhamel, an "immortal," developed this sphincter theme, emphasizing the value of sphincters from the literary as well as from the medical point of view.

A Public Health Survey of France

The French Academy of Medicine is a forum before which it has been the annual custom for some time for a leader in public health to present a summary concerning notifiable diseases during the past twelve months. This task has devolved on Professor Tanon, whose report on November 10th was on the whole reassuring. Not only have certain infectious diseases shown a decline, but, what is a source of additional comfort, this decline seems to be directly due to human action. This is particularly true of typhoid fever and diphtheria; the former has been combated by improvements in water supplies and by the control of the sale of shell-fish and the latter by vaccination with Ramon's anatoxine. Poliomyelitis continues to appear at the rate of five to nine cases per month in Paris and the Seine area, and, what is curious, none of these cases seems to have any connexion with the others. As for undulant fever, it is progressing in the South of France but is elsewhere stationary. Professor Tanon deplores the lack of uniformity in the drafting of health reports by local authorities, and he would like to see them coming into line in this respect in order that comparable data may be submitted to the central health authorities.

Venereal Disease Reforms in Prospect

In France and her colonies there are supposed to be about 1,200 licensed brothels. Of late there has been alarm in these establishments because of an apparently well-founded rumour that the new and enterprising Minister of Health, M. Henri Sellier, proposes soon to introduce summary legislation with regard to them. Intelligent anticipations of his reforms, which may come over-night, suggest that he may make the transmission of venereal disease a criminal offence. Compulsory treatment of venereal disease free of charge is also expected to be a feature of his legislation. There is a prospect, too, of organized warfare on the innumerable camp-followers of prostitution, from the whispering shadow who appears suddenly from nowhere and offers obscene pictures for sale, to the proprietor of hotels letting out bedrooms for about an hour at a time. The capital invested in the brothel traffic must surely approach astronomical figures, and M. Sellier's prospective attack on this vested interest will earn him the vituperative animosity of thousands of electors. A recent defence of the licensed brothel in the French medical press made strange reading.

Professional Animosities

While it is given to all to be conscious from time to time of rifts in the lute of medical concord, it is given to few to discover the remedy. Dr. Raphaël Massart is one of the few. But before he mentions his remedy, he very justly analyses the behaviour of the ailment he proposes to treat. With regard to its frequency, he finds it as common in the village where two doctors work side by side as at the top of the tree, where professors and consultants and teachers find their style cramped by colleagues at the same level. As for the attitude of juniors to seniors, it used presumably to be one of reverence. Now it is one of "admiration intéressée," which, being interpreted, means the calculating anticipation of a dead man's shoes. "A la mort des vieux, pour qu'ils laissent la place aux jeunes." Dr. Massart's remedy for all this has been worked out in practice in a certain town whose doctors have made a rule of meeting to dine with each other every month. It is so easy over a friendly glass of wine and in a post-prandial spirit to tell a colleague just what you think of him without starting a new feud. In each arrondissement in Paris there is a local medical society wherein the same system could be practised. With regard to the newcomer, Dr. Massart advises him to present himself at the local medical society, and there to explain his interests and qualifications and to meet friendly colleagues. This system is assuredly better than that of the newcomer wasting his time on individual calls which are apt to degenerate into individual encounters.

Scotland

Deaconess Hospital, Edinburgh

The Duke of York, accompanied by the Duchess, on December 1st at Edinburgh reopened the Deaconess Hospital, which has been reconstructed and extended. Mr. J. A. S. Millar, who presided, said that this hospital was the first, if not the only, hospital which had been built, extended from time to time, and wholly maintained by any Protestant church in this country since the Reformation. The hospital was founded forty-two years ago, and was open free of charge to patients from all parts of the United Kingdom without distinction. Among the special activities of the hospital were included the skilled training of deaconesses and the service of the sick poor in a crowded district of Edinburgh. The hospital had never been in debt, but it still required to find a sum of between £9,000 and £10,000 in order to meet the total cost of £42,000 involved in the reconstruction which had just been finished. The hospital now contained eighty-six beds, and a new children's ward had been named the Princess Elizabeth Ward. The Duke of York congratulated those who had been responsible for the successful reorganization of the hospital, and hoped that the record that it had never been in debt would be maintained by a generous and ready response to the appeal. He felt that he ought to mention the name of the late Lord Sands, who rendered in his lifetime great services to the Church of Scotland and who for many years was chairman of this hospital board, and he was glad to note that the new block would be named the Sands Memorial Wing. The royal party afterwards visited the various departments of the hospital, and the Duchess of York switched on a wireless apparatus which had been given to the institution.

Fife Hospital for Infectious Diseases

Fife County Public Health Committee on December 1st resolved to make the subject of an open competition plans for the erection of buildings at Cameron Hospital, Buckhaven, at a cost of about £50,000. This is a scheme for the centralized treatment of infectious diseases in East Fife. At the same meeting it was agreed that a subcommittee should consider and report on a proposal by the Joint Sanatorium Board that all children should be subject to an examination for tuberculosis when they were admitted to and discharged from school.

Glasgow Chemistry Department

At the last meeting of the University Court of Glasgow University, Principal Sir Hector Hetherington stated that a donation of £10,000 had been made by Imperial Chemical Industries Ltd. towards the building of a new chemistry department at Glasgow University. The new chemistry buildings, which were urgently needed, had been estimated to cost about £200,000. At the same meeting it was suggested that a fund, to be called the Principal's Fund, should be established for the purpose of helping students who, through unexpected emergencies, had difficulty in completing their course. No fund at present exists for rendering such help.

Health of Hamilton

Dr. J. Livingstone Loudon, medical officer of health for Hamilton, commenting in his annual report on the cost of treating tuberculosis, states that during the past year the cost to the borough was £9,510, and in the past fifteen years £142,463. For the latter sum there could have been erected 533 three-apartment houses, 462 four-apartment houses, and 364 five-apartment houses, and in all probability the provision of these new houses would have given better value as a preventive measure than the expenditure of the money on treatment. The question of milk supply to the consumptive patient was an important one, but unfortunately there was no method of ensuring that the milk was given solely to the patient ; in a large number of cases the milk specially supplied was shared by all the members of the family, while it was quite usual for the household supply of milk to be stopped when a special allowance began, so that there was no increase in the amount of milk consumed in the household. Another problem in the treatment of tuberculosis arose when patients became convalescent or were ready for discharge as cured, for it was often most undesirable to return them to evils from which they had temporarily escaped. For this reason the local tuberculosis hospital was crowded with healthy patients, who only required a home to which they could be discharged. This prevented the admission of some urgent cases.

England and Wales

London School of Medicine for Women

The annual dinner of the London (Royal Free Hospital) School of Medicine for Women was held at the Savoy Hotel on December 3rd, under the presidency of Dr. Dorothy Hare, F.R.C.P., physician to the hospital. A silent tribute was paid to the memory of the late Sir Edwin Deller, principal of the University. In proposing the toast of "The School and Hospital" Dr. Hare welcomed old students, their husbands and children, as well as past and present members of the staff, members of the managing committee, the council, and the board. In recalling the outstanding events of the year she said that the determination to keep the hospital in the forefront as regards its buildings, medical service, and equipment, though difficult to reconcile with the finances of the hospital at the moment, had led to a decision to erect a new isolation block for medical and surgical cases, and to complete the provision of obstetric isolation beds. The dean of the school had had a heavy task in stemming the flow of candidates for admission. The school had benefited by an endowment of £12,000, whereby there had been established a lectureship in clinical medicine. The interests of the hospital and the school were inseparable, and the more closely they could be identified the better. The health of the guests was proposed in a comprehensive speech by Dr. T. Jenner Hoskin, and admirable responses were made by Miss Dorothy Sayers, the well-known writer, and Sir Alfred Webb-Johnson, F.R.C.S. The latter remarked that there was an appropriateness in his invitation to that gathering, for although Middlesex did not take women students it could recall with pride and satisfaction that Miss Garrett (afterwards Mrs. Garrett Anderson) was able to get over some of her early difficulties by being admitted to certain classes at his hospital. Medical women had achieved their aims, and the great ideals of the founders of the "Royal Free" had been realized. The war had afforded the women's cause a great opportunity for fresh achievement ; indeed, maturity might be said to have been thrust upon them at the sword's point. Medical women had done more than found a great medical school. Old fogies used to say that women would be unsexed by a study of anatomy, and would become unmarriageable if they practised medicine. Events had proved the contrary. In some respects women had always outstripped men, and he did not doubt that they would do so in many branches of medicine and surgery. But the students and the recently qualified had still much to learn. They had to learn the bitter truth that in the estimation of some folk the gifted amateur would know by intuition far more than they had learned or ever would learn by close study. They had also to learn to think rapidly, because they might have to alter their plans at a moment's notice to meet a changed situation. They had to learn that it was not possible to get more out of a machine than was put into it, and that if the fathers ate forbidden fruit the children's teeth were very liable to be set on edge. Sir Alfred Webb-Johnson concluded by expressing thanks on his own behalf and on behalf of his fellow male guests for the honour done them by inviting them to dine at the "medical women's G.H.Q." The toast of "The Chairman" was proposed by Miss Beck, F.R.C.S., who spoke of the admiration and affection in which Dr. Hare was held.

Health Conditions in Hull

Dr. N. Gebbie, medical officer of health for Hull, in his report for 1935, remarks that while diphtheria was slightly less prevalent and less severe than in previous years, the occurrence of cases of the "gravis" type of infection still gave cause for anxiety. He emphasizes the imperative need for parents of young children to take advantage of the facilities which have been provided for Schick testing and immunization. In 1935 notified cases of diphtheria numbered 956, as compared with 1,076 in 1934, while the number of deaths fell from sixty-five in 1934 to thirty-four in the year reviewed. Satisfactory progress has been made towards the completion of the combined clinic, which will serve for maternity, child welfare, and school medical purposes, and will meet the needs of the large and recently developed residential district in North Hull. The number of women dying in or in consequence of childbirth fell from thirty-three in 1933 and thirty in 1934 to fifteen in 1935. Five of these deaths in the year under review were due to puerperal sepsis—one following abortion—and ten to accidents of pregnancy. Five of the patients who died had attended the municipal ante-natal clinic. The number of patients admitted to the municipal maternity home continues to increase, a greater number of abnormal or complicated cases having been sent in by medical practitioners in the city. About thirteen miles of new water mains were laid in Hull during 1935. The scheme for the new deep main outfall sewer for West Hull is well advanced, and a new outfall sewer is to be constructed for East Hull. The systematic reconstruction of old sewers is being continued. Complaints of mosquito infestation in the northern part of the city led to an intensive search of the area, in the course of which new breeding places were detected. It was found, particularly, that these insects were breeding in street gullies, and this menace was dealt with by larvicides. A new strain of mosquito of a vicious kind was discovered, and has been named *Culex pipiens*.

Department of Physical Medicine at London Hospital

The new department of physical medicine at the London Hospital, which was visited by the Duke of Kent on December 1st, is a large and well-equipped building of five floors. The ground floor is devoted to massage and exercises, with patients' gymnasiums and treatment rooms; on the first floor there are separate cubicles for electrical treatment, including diathermy and the application of radiant heat and currents of various kinds; the second and third floors comprise the school of massage, where women students are trained to qualify for the diploma of the Chartered Society; and on the fourth floor is the students' common room and also a flat roof for exercises. The department has cost £36,000 to build, the fund having been started by a handsome donation from Sir Harry Mallaby-Deeley, meeting nearly half the cost, and the completion has been made possible by a contribution from the London Hospital Aid Society. Sir William Goschen, chairman of the hospital, in welcoming the Duke of Kent, said that it had been desired to build the new school on lines worthy of the traditions of the hospital and its medical college. The Duke of Kent said a few words of appreciation, remarking on the value of grouping into one unit all the various branches of physical medicine at the hospital, instead of, as formerly, having them dispersed all over the building. The plans for this new department were first drawn up as long ago as 1911, when the control of all forms of electrical treatment and massage was unified under a single head, Sir Robert Stanton Woods; but owing to the war and persisting financial difficulties the completion has been long delayed. The number of attendances at the department of physical medicine last year for massage and remedial exercises was 20,000, and for electrical and radiant heat treatment, 22,000. A feature of the electric treatment rooms is the two carbon-arc lamps which were used in the treatment of King George V during his illness in 1928, and which were afterwards presented to the London Hospital.

CORRESPONDENCE

The number of letters received for publication is so large that we must ask correspondents to make their points briefly and to regard 600 words as the upper limit of length.

Medical and Dental Inspections of School Children

SIR,—The letter from Sir Ernest Graham-Little published in your issue of December 5th shows that there is misapprehension as to the arrangements made by the County Council for the medical and dental inspection of children attending the elementary schools of London. It is desirable, therefore, that I should set out exactly what the position is.

Medical Inspections.—The Board of Education prescribes for the country as a whole that all children in elementary schools must be medically inspected at three age periods. Those at present generally fixed are: (1) on entrance to school; (2) at age 8; (3) at age 12. Any child deemed to be in need of medical inspection is, however, examined as a special case irrespective of whether it falls in the above age groups or not. With the consent of the Board, the London County Council has arranged for four routine inspections during school life instead of three, and the routine age groups for medical inspection in London are: (1) on entrance to school; (2) at age 7; (3) at age 11; (4) in the term before that in which the child is due to leave (at present, age 13 years 8 months approximately). The school doctor at his inspections takes careful note in all cases, amongst other things, of the extent of dental caries, if any.

Dental Inspections.—The Board of Education holds that in addition to medical inspections in schools there should be special inspections by the school dentist of the state of the children's teeth. For this purpose the Board of Education is of opinion that medical inspection is not an equivalent to dental inspection. The ideal which the Board advocates is an annual routine dental inspection of all children in addition to the medical inspections as above prescribed. The dental services in London have been gradually increased. In the years immediately preceding 1934 it had been arranged that the children in the schools should be inspected by the school dentist each year except in those years in which a routine medical inspection took place. In practice this meant that there were four inspections by the doctor and six inspections by the dentist during the normal elementary school period. In the three-years programme commencing in 1935 the Council decided that further dental inspection should be made, so that by 1937 there will be a dental inspection annually.

There has been no cutting down of medical inspections, and the position in 1937 will be that the children are examined *as a routine* four times during their school life by the school doctor and ten times by the school dentist. The words "as a routine" have been italicized as it is sometimes stated that children are only inspected four times by the school doctor. This is a serious understatement, as provision exists, of which advantage is freely taken, for special examination of school children whenever desired by care committee members, teachers, parents, etc.—I am, etc.,

FREDERICK MENZIES,
School Medical Officer.

Public Health Department,
County Hall, S.E.1, Dec. 8th.

Pulmonary Tuberculosis in Young Adults

SIR,—In the interesting paper by Dr. W. Ernest Lloyd and Dr. A. Margaret C. Macpherson in your issue of December 5th (p. 1130) persons accepted as definite cases of pulmonary tuberculosis were defined by them as those who either had died of the disease or had had treatment in a sanatorium. I am afraid that I for one cannot accept without qualification the view that treatment in a sanatorium is necessarily evidence of the presence of active tuberculosis. Apart from cases admitted for observation, it can scarcely be denied that in most sanatoria a certain number of non-tuberculous cases have been treated. No indication is given as to how many institutions were included in the survey, but experience has shown that with a number of observers there is almost certain to be some variation in standards.

On the other hand, I welcome their conclusion that the observation of contacts should be continued for at least five years after they were last exposed to infection. In a paper published in 1930 (*Tubercle*, 1930, ii, 493) and quoted in the memorandum on contacts issued this year by the Joint Tuberculosis Council, I reported the finding of 153 cases of tuberculosis occurring subsequently in the immediate families of 1,035 known definite cases, the average interval between the discovery of primary and secondary cases being three and a half years. Although my paper was not solely concerned with young adults, among my conclusions was one which recommended that close contacts of patients whose sputum had contained tubercle bacilli should, if possible, be kept under observation and re-examined at intervals for at least four years. The words "if possible" are worthy of note, as to anyone with experience of young adults the advice, though sound, may well appear to be a counsel of perfection.—I am, etc.,

Leigh, Lancs, Dec. 5th. GEORGE JESSEL, M.D., D.P.H.

Technique of Caesarean Section

SIR,—I read with interest an Epitome abstract of Dr. H. Rossenbeck's work, No. 475 in your issue of December 5th (p. 96).

As a general surgeon practising gynaecology since 1919 I agree with all the steps of the operation except the third, in which the transverse incision of the uterus is advocated in preference to the longitudinal one. But I hold that there is one very important extra detail—namely, that when the uterus has been eventrated and evacuated of all contents the mucosa be lightly swabbed with iodine on a sponge-holder. I first saw this done when a student attending the Royal Maternity Hospital in Glasgow in 1914, and have followed the technique ever since.

In a series of over one hundred sections I record a personal maternal mortality of *nil*. I have never refused in any case to perform the operation when requested to by the attendant physician or accoucheur, even if, as occasionally happens, the patient may have been forty-eight hours in labour and the subject of one or more attempts at delivery by forceps.

I maintain that speed of operation, following a rigid technique, is all-important for such success. Complications have been negligible and emboli unobserved in this series. I have had one classical Porro's operation, two Caesarean myomectomies, two subsequent sections, and one for the third time. In each of the latter I have observed only the faintest trace of a previous scar in the uterus, and, to my surprise, never encountered unabsorbed any of the silkworm-gut which until recently I employed for the deep muscular sutures.

I never advocate sterilization of the patient unless urged by the doctor or patient concerned. The operation should be completed easily in from twenty to twenty-five minutes and the shock minimal. When discussing the subject of swabbing the eventrated uterus with an eminent London gynaecologist a short while ago he considered the shock factor too great, but I have not experienced this. The shock factor is proportional to the time taken over the operation. I have performed this operation in a cottage hospital with only the assistance of an anaesthetist and a matron or theatre sister, and the result was equally successful. Provided the indications are adequate and the surgeon knows his technique this is surely, under almost all circumstances, one of the most satisfactory operations in surgery.—I am, etc.,

Oxford, Dec. 5th. HUGH WHITELOCKE.

Treatment of Carcinoma of the Cervix

SIR,—"Is this a private quarrel or may anybody join in?" said the Irishman, when he saw a brawl going on in the middle of the street. On this occasion it is Mr. Frank Cook that I should like to draw aside and just whisper a word or two into his ear. I would ask him if it is kind to suggest that Mr. Bonney has so little clinical judgement that he operates on patients who are such very poor risks as to raise his operative mortality? Perhaps, however, Wertheim's operation in these cases is in anticipation of the passing of the Bill for euthanasia. If so, there is nothing more to be said.

Speaking seriously, however, I do think it is a pity that Mr. Cook and his colleagues do not publish results of their carcinoma treatment at the Chelsea Hospital for Women—at least, I cannot find such records if they exist. I can fully understand that Mr. Cook is so busy that he cannot collect his own cases, but in a well-organized hospital like the Chelsea Hospital for Women, where there must be an efficient follow-up department, it should not be difficult to have statistics readily available. If these figures are not published, Mr. Cook and his colleagues must not complain if we use the only statistics that are published and show without any possibility of doubt that the end-results of radiotherapy are very much better than those obtained by hysterectomy. Personally, I feel sure that the next generation will have no use for surgery whatever in the treatment of this disease.—I am, etc.,

London, W.1, Dec. 2nd. MALCOLM DONALDSON.

SIR,—I should like to thank Mr. Victor Bonney (*Journal*, December 5th, p. 1166) for his courteous criticism of a remark which I made in my last letter (November 28th, p. 1112), and to assure him that it was not meant to imply any obstructive attitude on his part to the legitimate progress of radiotherapy in the treatment of carcinoma of the cervix. There is still plenty of scope for the Wertheim operation on the one hand and for radiotherapy on the other. It is very difficult to decide, however, with the ever-present problem of the regional glands, how far one is justified in treating apparently operable cases by radium and deep *x* rays.

Accepting Mr. Bonney's figure of 40 per cent. for cases found "glands-involved" at operation, this leaves 60 per cent. of cases "glands-free" in a series of operable cases. Now assume that one hundred of these operable cases presented themselves for radiological treatment. They would be classified for statistical purposes under the headings Stage 1 and Stage 2. It would appear at first sight that radiologists must produce statistical proof of cure in over 60 per cent. of these cases as evidence of

ability to cure the regional glands. Actually this is not sound reasoning, as quite a considerable number would die from other causes unaffected by whether glands were present or not. Haemorrhage, sepsis, renal complications, fistulae, anaemia, etc., would take their toll of the 60 per cent. gland-free. Actually, therefore, a five-year cure rate of 60 per cent. must include a certain number of gland-involved cases. The question then is, Can any clinic whose statistics are above criticism claim a cure rate of 60 per cent. or over?

I have not at hand any recent figures published by any clinic of repute, but I should like to refer to a report in the *Journal* of December 15th, 1934 (p. 1105), wherein the Marie Curie Hospital, London, was credited with an 83 per cent. cure rate for Stages 1 and 2. This is an extraordinarily high cure rate, the general average for similar cases treated at six other institutions being 50 per cent. Likewise, the cure rate for Stages 3 and 4 was quoted as 40 per cent., compared with 27 per cent. for the other six institutions. I do not know whether these were five-year results, as no mention is made of it in the report, but I presume so.

Assuming that statistical proof were forthcoming from one or two clinics of the efficacy of radiotherapeutic methods in the treatment of the regional glands, would it be justifiable to continue to practise the Wertheim operation? There would still be a certain number of cases—enumerated in my last letter—which would be unsuitable for radium treatment. Moreover, operation will still give better results (especially if supplementary deep *x*-ray therapy is available) than the average radium treatment to which patients are subjected outside of a limited number of institutions possessing adequate radium and *x*-ray facilities under the control of experienced technicians. Radium in capable hands, like the scalpel, can do great good. In the hands of those who lack training in radium technique it is capable of producing effects more terrible and more painful than cancer itself. The small tube of radium looks so harmless. Therein lies its danger. If only those gamma rays were visible to the naked eye!—I am, etc.,

Bournemouth, Dec. 5th. J. W. Nankivell, F.R.C.S.Ed.

Milk Allergy

Sir,—Dr. D. A. Williams's article in the *Journal* of November 28th (p. 1081) on milk allergy in school children calls attention to a matter long overlooked by officialdom. For over thirty years I have preached a doctrine similar to that of Dr. Williams, especially as regards asthmatics. It is useless trying to treat asthmatics while they take much raw milk. Man is the only mammal that feeds on milk after weaning, so that raw milk can hardly be regarded as a natural food for children after weaning or for adults. Many a child is rendered asthmatic and kept so by milk being poured into it for extra nourishment. Milk rhinorrhoea, to which also I called attention long ago, is on the increase since milk was introduced wholesale into the schools, and rhinological treatment is apt to be misdirected through non-recognition of the cause. A sturdy young man, lately sent me by a colleague, has been permanently deafened by being dosed with milk at a boarding school and after he left it. The sloppy condition of his nose and also his deafness promptly improved after milk was stopped, but his hearing will remain deficient owing to thickening of his Eustachian mucosa. This case is only one of many.

Boiled milk is as bad as raw milk for asthmatics; fermented milk is another story, and those tribes or races which regularly take milk fermented in some form seem to be comparatively free of "allergy," but it is to be noted that they are outdoor folk. One must admit that the withdrawal of milk involves loss of a food rich in the calcium so necessary for growth. This must be met by proper treatment of milk, by giving other foods rich in calcium, especially herring, or by sodium calcium lactate. This is not the place to discuss allergy, but I wish to put two points:

1. Apart from the fact that milk is apt to constipate and so lead to toxicosis, Koessler and Hanke showed that histamine is readily produced in the gut when milk, *B. coli* (certain strains), and an acid reaction coexist, though milk contains no histidine; histamine causes bronchospasm and certain abnormal vascular reactions. What is gained by calling such reactions to a known poison allergic?

2. Dr. Williams stresses the hereditary factor. It is apt to be forgotten that a family history of allergy is not proof of heredity in the Mendelian sense. It has been said that the tendency to allergy is more apt to pass by the mother's side. But so is the tradition, the habit, as to nurture. The mother rears as well as bears. My cat—an old Persian—likes milk, but promptly vomits it. Is this allergy, and is this inherited? The last asthmatic dog (petted like an "only" child) a "vet" asked me to treat was a typical case, with 40 per cent. eosinophils. Treated as I would an asthmatic child, it was "a new dog" (to use its owner's expression) in six weeks; eosinophils were 4 per cent. Was this hereditary?

I am the more tempted to write this letter because of the much-needed reference to "the abused word allergy" on page 1090 of the same number of the *Journal*.—I am, etc.,

Glasgow, Dec. 2nd. James Adam.

Nineteen Years' Survival after Laryngectomy for Advanced Cancer

Sir,—You may perhaps consider the following case worth recording.

In May, 1917, a man aged 51 was sent to me by Dr. Sandford of Cork suffering from carcinoma involving the base of the tongue, side walls of the pharynx, and the upper portion of the larynx. The glands over both carotid sheaths were involved. I agreed with Dr. Sandford's opinion that the disease was too far advanced for operation to afford any reasonable chance of success. The patient, however, implored me to try, and I with some reluctance consented. I performed a total laryngectomy and made a dissection of the glands at one operation. He made an excellent recovery and remained perfectly well, leading a very active life, for sixteen years and a half. He then, in November, 1933, developed a recurrence immediately above the tracheal opening in the neck. This broke down, and a fistula formed through which fluids leaked during swallowing. Radium and deep *x* rays were applied, the tumour disappeared, and the fistula closed. Two years later, in December, 1935, he got another recurrence under the right sterno-mastoid, on which treatment had no effect, and he died last week, nineteen years and a half after the first operation.

—I am, etc.,

Dublin, Dec. 4th. Robert H. Woods.

Importance of Suggestion

Sir,—The following illustration might interest your readers and help to draw attention to the importance of suggestion upon both in-patients and out-patients treated at general hospitals.

This week a skilled carpenter was referred to me by his solicitor for an opinion as to his prognosis. The man had been very well treated in the surgical wards of one of the

leading London hospitals for a fracture of the skull, and three weeks after admission it was found necessary to perform a trephine operation in order to stop the bleeding from a small vessel on the brain surface. The patient was able to give me accurate information regarding his various operations and treatment which agreed exactly with that which I had already received from other sources. I therefore asked him how he came to know so much about his condition, and his reply was that he had read the notes of his out-patient record while waiting to see the surgeon from time to time in the out-patient department of the hospital.

The effect of this knowledge upon the patient has been to make him extremely apprehensive regarding his future, a degree of apprehension which, in my opinion, is not in any way due to a desire for compensation, as the man has a wife and family, and would be much happier at work than receiving 30s. a week, or any sum of money, as compensation for the injuries received as the result of the accident.

Would it not be possible for the deans of all medical schools, especially where medical students are being trained, to see to it that the out-patient records are not handled by patients, but are placed direct upon the desk of the honorary physician or surgeon? A treatment card bearing the same number as the patient's history book can be given with safety to the patient and carried by him to the dispensary. Your readers may have noticed a report in the Press recently of an inquest on the death of a mother of three children who had been handed by a hospital surgeon a sealed letter addressed to her doctor. Curiosity forced the woman to open the letter, and when she had read it she was so distressed that she committed suicide. Could not such letters, sent to and from members of the profession to each other regarding their patients, be forwarded by post and not handled by patients at all? The same principle applies to the discussion of patients' illnesses at the bedside. So often teachers of medicine seem to forget that the patient is a personality and not a case of a certain rare disease, and that he is particularly keen to hear the discussion of his illness and of the possible diseases from which he might be suffering. Surely all teachers of medicine could at least withdraw to the end of the ward or to a room adjoining the ward to discuss the illnesses of their patients.

In certain universities in America—for example, at Yale University—all the records of the patients in the wards are kept in numerical order on a trolley, which usually stands by the table of the sister in charge of the ward so that entries can be made without difficulty by the nursing staff. The lower shelf of this trolley carries the usual instruments which might be required for the examination of patients during a ward round. The trolley is wheeled round the ward by a nurse. So far as I am aware this system is not generally employed in British hospitals, but it is one that could be put into effect at very little cost in all hospitals, and is certainly worthy of consideration.

One is pleased to note the interest which is now being taken in the treatment and teaching of nervous diseases by many members of the medical profession, including the General Medical Council, who have made definite recommendations to the universities of Great Britain on this subject, and by Lord Horder, who in the *Times* of November 30th makes a strong appeal for adequate treatment of individuals suffering from nervous disorders "by better education and by research that will lead to prevention." Perhaps the teaching hospitals could see to it that each contains a psychiatric department staffed by physicians with experience in psychiatry and neurology, not necessarily the medical superintendents of the nearest mental hospitals, although in many cases these physicians are quite capable of carrying out the work suggested.—I am, etc.,

London, W.1, Dec. 4th. RALPH A. NOBLE.

Sanatoria for Rheumatism

SIR,—We would like to endorse the plea made by Sir Leonard Hill and his colleagues in your issue of November 21st (p. 1050).

Hospitals dealing entirely with chronic rheumatic diseases have all long waiting lists; many of the cases in hospital could be, and would be, moved out of hospital at a considerably earlier date were it possible for them to go to sanatoria where, as Sir Leonard Hill says, sun and air baths and the right diet could be given. Thus there would be a greater circulation of patients in these hospitals, and cases could be accepted almost as soon as application were made (thus eliminating the usual two or three months' waiting list). This would stimulate the general practitioner to send his cases at a very much earlier stage than at present. There can be no more pathetic sight for those of us who have to deal with chronic rheumatic diseases than the terrible deformities sufferers with rheumatoid arthritis are allowed to acquire under domiciliary treatment by their own doctor (and in some cases in general hospitals) before they finally find their way to the rheumatic hospitals.

Bath is building a new and larger rheumatic hospital of 250 beds to replace the present one, which was built 200 years ago. Instead of the dark and dingy wards in the present hospital it is proposed that the new wards should have ample balcony accommodation for beds with each balcony facing due south, and that a flat roof and solarium be provided. Thus it will be seen that the new hospital will combine the advantages of treatment by the hot radio-active springs together with treatment on the lines adopted in tuberculosis. The use, however, of the springs necessitates the hospital being built in as close proximity to them as possible, and therefore its situation is low-lying.

If it were possible to have a rheumatic sanatorium in surroundings similar to those of a tuberculous sanatorium acting as a convalescent home for each rheumatic hospital, we do not doubt that the advantages accruing to patients would be very markedly enhanced. As an experiment we suggest that the Ministry of Health might see the advantage of building a rheumatic sanatorium. The site would have to be near the town to facilitate the work of the visiting staff, which would include orthopaedic surgeons, experts in plaster work, bacteriologists, etc.—We are, etc.,

A. GORDON WATSON.
Bath, Dec. 1st. G. R. P. ALDRED-BROWN.

Pituitary, Ovary, and Cancer

SIR,—In the *British Medical Journal* of December 13th, 1930, you were kind enough to publish a letter from me suggesting a hormonic cause for the condition of cystic ovary. That theory is apparently accepted by leading gynaecologists to-day. Further study of the interaction of ovary and anterior pituitary from a pathological viewpoint calls for consideration of the following:

1. (*a*) The injection of an acid extract of the anterior pituitary lobe into either a hypophysectomized female or a normal one will induce ovulation and maturation of a number of Graafian follicles with production of oestrin. This has been proven to be a cancer-producing substance. (*b*) If an alkaline extract of the anterior lobe is injected into the female animals, then direct luteinization of the follicles will occur without rupture and ovulation. From this it would appear that in the pituitary there are two sorts of gonadotropic hormone. The first one, which produces oestrin, is called prolan A, and the second prolan B.

2. In order to have a normal acidity in human gastric juice the "intrinsic factor" of Castle is necessary. If this "intrinsic factor" be absent there results a deficiency in the hydrochloric acid—a precursor of local malignant disease or pernicious anaemia.

3. In order to have complete physiological action between anterior pituitary and ovary, is there an "intrinsic factor" or "*factors*" (analogous to the "intrinsic factor" of Castle) present in normal oestrin, and controlled by the anterior pituitary lobe?

4. In haemophilia the female does not show the disease but transmits it to her male offspring: Is there an "intrinsic factor" controlled by the anterior pituitary lobe missing in oestrin in this disease?

The points I am putting forward may be summarized thus:

Does the female in her ovary contain "intrinsic factors" produced by prolan A, which normally will prevent the onset of cancerous growths in her offspring?

If these "intrinsic factors" are absent or in abeyance then cancerous growths will occur in her offspring, and so on to further generations (by chromosomes and genes), or a precancerous state will be produced, both conditions depending on what type of "intrinsic factor" is missing, and this will also determine the type of growth which will occur.

If this supposition is correct then it is feasible that the female ovary can be the only possible means through the action of the anterior lobe of the pituitary of transmitting cancerous growths, and that the male gonads have nothing at all to do with the pathological process. Does prevention of cancer point to sterilization of obvious transmitters?—I am, etc.,

John N. McIntosh, M.B.Ed.,
M.O.H. and Quarantine Officer, Jamaica.

Island Medical Office, Kingston, Nov. 14th.

Treatment of Peptic Ulcer

Sir,—In your issue of November 14th (p. 967) there is an account of a procedure and the results of surgical intervention in a series of cases of a condition described therein as "high gastric ulcer," the apparent object of the writer being to stress the value of the particular technique employed, in "most" cases on subjects whose symptoms had failed to subside after prolonged institutional treatment.

The "most gratifying" conclusions arrived at are based on the writer's interpretation of the results obtained, which, however, may be equally fairly reviewed in the reverse order to that in which they are taken in his article, when they will be found to lend themselves to a quite widely divergent conclusion.

A study of his notes on the most recent (Case 10) discloses the fact that, although this patient was free from discomfort after food eight months after operation, yet in the preceding three cases, respectively eleven, seventeen, and again seventeen months after operation, discomfort after food is mentioned in each instance as having been present, with (in Case 7) an additional record of spasm.

Discomfort after a heavy meal and a rapidly emptying stomach form the record in Case 6, twenty months after operation. Thereafter both symptoms and physical signs get more and more disquieting. Case 5, after three years three months, showed under the *x* rays "still large stomach," though apparently diminishing, which emptied itself rapidly; Case 4, after five years' interval, frequent vomiting and pain; of Case 2 records are not available. Case 1, after six years three months, was characterized by vomiting after an excess of beer drinking, which, I imagine, does not commonly cause vomiting in a normal stomach. Out of the whole number there is only one showing complete recovery maintained throughout the five years five months it came under observation—namely, Case 3.

It will be observed that all the rest of the series without exception—that is, eight out of a total of nine—are reported as having shown either symptoms of distress or the physical sign of the rapid emptying of an organ that normally does not empty rapidly, the former pointing to the persistence of acidity or to its return after eight months, the latter to a definitely progressive increase of local disturbance with the progress of time, thus constituting records which, I think must be admitted, are suggestive of a tendency towards relapse rather than towards recovery as is claimed. The compiler's statement that eight can be regarded as clinical cures would seem to require some qualification as to what is to be understood by the word "clinical" in this connexion.

To me, taken collectively and in this order, the general sequence of reported events in the series would appear to confirm in an unmistakable manner the usual experiences of those who have been submitted to surgical intervention for gastric ulcer. The "medical" view, or at any rate the view of one general practitioner, about both gastric and duodenal ulcers is that they are the natural outcome of hyperacidity, and that hyperacidity is fundamentally a temperamental condition, which in reality dominates the entire situation, it having been an extremely common experience in his practice to find that whether a case has been treated by the chemical specialist with an alkali or by the surgical specialist with the knife neither has been permanently effective in reducing acidity to a sufficient extent to prevent recurrence.

There have been many effective ways of dealing with such cases open to the general practitioner ever since the introduction of normal horse serum in this connexion some thirty years ago by E. C. Hort, while among others—also quickly effective—may be mentioned bowel inundation with pure potassium permanganate solution, which reduces systemic acidity at once for the time being; chromotherapy, which is slower perhaps but more lasting and certain; thyroid and manganese in cachet form, which at times is extraordinarily rapid and efficacious; and, finally, an autogenous vaccine which will often clear up a case that is liable to relapse from sheer inability to withstand reinfection, for an appropriate vaccine will *per se* recondition the morale of a human being who has lost his way: the value of a well-conditioned morale cannot be overestimated as the best safeguard in the maintenance of health.

If you will allow so extreme a medical view to be given expression to as has been allowed in your columns to the surgical view referred to above, I would fain add that in my opinion surgical intervention in either gastric or duodenal ulcer is only justifiable as an extreme emergency measure to save life, and the administration of an alkali equally only justifiable in the emergency of acute pain for its transient palliative effect, for these lesions present no insuperable difficulty to the general practitioner, though the patient himself may and unfortunately sometimes does.—I am, etc.,

F. A. Hort.

London, N.W.8, Nov. 14th.

Substances Promoting Cell Growth

Sir,—As one who views the problem of cell growth control from a clinical aspect alone, I venture the following observation: we so far have no clinical evidence of any glandular secretion contributing in any way to the control of the growth of epithelial cells, or of a substance which administered in any manner influences beneficially the carcinomatous epithelial cell during post-natal existence, such as we have with regard to the effects of pituitary and thyroid secretions on connective-tissue cells. From the age incidence of carcinoma and from the fre-

quency of irritative lesions preceding and determining its site, I have formed the opinion that the epithelial cell itself has the power of neutralizing carcinogens until it enters the degenerative stage.

It is possible that the anti-carcinogen is evolved during the embryonic stage and stored by the cell, and in course of time becomes insufficient in quantity. There is one active organ connected with the foetus which is not present after birth—the yolk sac—which possibly, and I think probably, owing to its ectodermal origin and connexion with the gut, has the function of building from the foetal blood a substance required for embryonic growth, and returning that body to the foetal system via the alimentary canal. Is it not possible that this product contributes towards the anti-carcinogenic power of the epithelial cell?—I am, etc.,

Co. Derry, Dec. 2nd. P. HEGARTY.

Insertion of Smith-Petersen Nail

SIR,—Mr. B. H. Pidcock has given us yet another modification of the Smith-Petersen nail (*Journal*, December 5th, p. 1145). In my experience partial extrusion of the nail can be prevented by the following technique.

1. After exactly reducing the fracture a nail of correct length is introduced along the femoral neck right up to the nail's head.

2. With the aid of the "impactor" solid impaction of the fragments is then made with twenty good blows of a heavy (28 oz.) mallet. The amount of impaction can now be gauged by the length of the nail's shaft extruding—that is, if the nail previously driven home to its head shows, after impaction, one centimetre of its shaft we may conclude that there has been one centimetre of impaction. Properly carried out, impaction must loosen the nail in its longitudinal axis, and if the nail is left in this loosened state it will certainly slide outwards. If impaction has been well carried out (this can readily be checked in radiologically controlled operations) no harm will result in the next step, which is, in my opinion, the solution of Mr. Pidcock's problem.

3. The extruded nail is now driven home to its head.

I am well aware that this last step does not conform with the technique originally described, in which it was laid down "that the nail should not be struck after impaction has been brought about." When following this instruction I, too, have had nails slide outwards (and with one unfortunate result). In twenty cases I have used the technique I describe with uniformly satisfactory results.—I am, etc.,

WILLIAM GISSANE, Ch.M., F.R.C.S.

St. James Hospital, S.W.12, Dec. 6th.

Analysis of Clinical Statistics

SIR,—In the *Journal* of August 1st (p. 221) you published an article entitled "Problems of Chance in Clinical Work," by Dr. Donald Mainland. In it he showed how mathematical rules may be applied in analysing the clinician's statistics, and for his purpose he utilizes the figures contained in my article on "The Indications for Surgery in Bell's Palsy."[1] He enunciates the general principle that the clinician should claim no significance for his findings until they have passed the rigorous scrutiny of the statistician. *En passant* he accuses me of elementary mistakes in arithmetic. It would perhaps have been more courteous if Dr. Mainland had written to me personally before embarking on his paper.

The application of rigorous mathematical methods to the tentative results of an experimental science is still a subject of discussion, even among mathematicians themselves. Perhaps you will allow me to discuss that later on. For the present I shall confine myself to a more personal defence and shall show that: (1) My article was quite tentative and did not claim finality. (2) My arithmetic was correct. (3) Dr. Mainland has himself fallen into a simple error, and in doing so exemplifies perfectly my last contention. (4) The statistician in analysing a problem of which he has no *clinical* knowledge is liable to overlook certain factors; his deductions may be absolutely misleading as a consequence.

No clinician claims finality for his figures, particularly if, as in this case, the field is practically virgin soil. Figures are given in the full expectation that others will be published for comparison. In my own article I was perhaps wrong to state categorical odds. Further I should not have described my work as an attempt to solve the problem on statistical lines, but it was abundantly clear from the text that it was intended as a sketch of the general problem. I said, for instance, "It is very desirable that these investigations should be repeated," and again, "If confirmation of these cases is obtainable, etc.," and so on.

With regard to the arithmetical error the history is rather amusing. My article had reached the "proof" stage when I realized, to my dismay, that I had made a mistake in my figures. Fortunately I was able to correct it. Dr. Mainland has made the identical mistake. The figures in question dealt with the relation of certain symptoms to the prospects of recovery in Bell's palsy as follows:

Cases	No Pain, No Loss of Taste	Pain, No Loss of Taste	No Pain, Loss of Taste	Pain and Loss of Taste
Recovered ... 25	18	4	2	1
Failed to recover 18	2	6	4	6

Consider the last column. We have seven patients with pain and loss of taste out of whom one recovered and six did not. It seems obvious that the arithmetical odds are 6 to 1 against recovery. These are the figures I gave originally and also Dr. Mainland's. A little further consideration of the problem, however, reveals that these figures must be false. Consider the "sample" of cases above—twenty-five recoveries and eighteen failures. Clearly it is *not representative*. We know that the proportion of recoveries to failures is more like seventy-five to eighteen. This fact was clearly stated in my article. I explained the bias of my sample by assuming that many patients who had recovered would not bother to reply to my questionary, whereas the majority of those who had not recovered would reply, in the hope of being cured. I considered it legitimate, therefore, to correct the bias by multiplying the recovery cases by 3 in order to produce a fair sample containing seventy-five recoveries to eighteen failures. The table now reads:

Cases	No Pain, No Loss of Taste	Pain, No Loss of Taste	No Pain, Loss of Taste	Pain and Loss of Taste
Recovered ... 75	54	12	6	3
Failed to Recover 18	2	6	4	6

We may now deduce that in a total of 6 + 3 patients who had pain and loss of taste six did not recover. This gives the odds of 2 to 1 against recovery. Now Dr. Mainland may legitimately complain that I did not make this correction clear in my article. This I admit, but I must point out: (*a*) I did not wish to confuse the article with mathematics. (*b*) I assumed that anyone interested in my figures to that extent would write to me first to discuss them. (*c*) Above all, I assumed that any statistically minded critic would avoid the elementary error of deducing from an unrepresentative sample.

This brings me to my last point—namely, that Dr. Mainland, no doubt with the best intentions in the world,

[1] *British Medical Journal*, 1936, i, 580.

has arrived by means of the most imposing methods at completely misleading figures. This is the danger to which I have already referred. I may add as a point of general interest that further cases which I am collecting continue to confirm my figures.—I am, etc.,

Liverpool, Dec. 2nd. I. A. Tumarkin.

Sedimentometers

Sir,—In recent issues of the *Journal* various devices have been described for automatically recording sedimentation rates. The choice of the name sedimentometer for these instruments seems to be an unscientific one. The authors, I presume, still continue to measure the rate of appearance of clear plasma in a column of citrated blood contained in a vertical tube closed at its lower end. Such measurements, of course, cannot give any idea of sedimentation rate. It is obvious that in such a tube the rate varies from zero at the bottom of the tube to approximately the true sedimentation rate at the upper end. Owing to the fact that blood cells have volume as well as mass, this approximate sedimentation rate at the upper end can only last for a few seconds, depending on the length of the column of blood. The application of the elementary principles of differential calculus to the problem leads one to the conclusion that in order to measure the sedimentation rate over a period of one hour it would be necessary to use a tube about three thousand yards in length. Immediately after the fixation in position of the ordinary Westergren tube the effective length of the sedimentation tube begins to alter, owing to the volume occupied by the blood cells already sedimentated at the bottom of the tube. If these latter could be removed from the tube then we could obtain an idea of the free sedimentation rate of the cells in the uppermost part of the tube.

I have attempted to overcome the difficulty by using the ordinary Westergren tube, open at the bottom and closed at the top by vaseline or by a stout rubber cap. The small container from which the tube is filled is left underneath, so that the inferior end of the latter is immersed and consequently the fluids in the tube and the container are in continuity. The Westergren tube is then fixed vertically to a horizontal rack by a piece of plasticene, or by any other means which ingenuity suggests. It is important to suck the blood into the tube slowly, otherwise an eddying motion is imparted to the red cells, which vitiates the initial readings. Before using the Westergren tubes I widen the inferior opening slightly, giving it a funnel shape. Westergren tubes with a small bulb blown out about one centimetre from the lower end can also be used. By this technique we hope to get a nearer approach to the true sedimentation rate and to justify the use of the term. The rates thus obtained are higher and are independent of the length of tube employed.—I am, etc.,

Robert Fleming.

The British Sanatorium, Davos, Dec. 4th.

Diphtheria Immunization

Sir,—As a general practitioner, in face of the facts laid before us as to the better results of the "three-shot" method compared with the "one-shot" in conferring immunity (*Journal*, November 28th, p. 1078), I wish to put forward this difficulty. First, the children belong to the parents. Secondly, the response to an injected foreign protein is of four kinds: (1) no response; (2) anaphylactic conditions, which occasionally mean convulsions or collapse; (3) a thermal reaction; and, later, (4) serum sickness. Anaphylaxis is a state of hypersensitiveness to the action of a foreign protein brought about by the previous introduction of that protein. Where the anaphylactic shock occurs after the first of the proposed three injections, or where even the thermal reaction with its associated headache and prostration comes on a few minutes after the injection, the parents will not have the child again injected, and that does for the "three-shot" method.

Anaphylactic shock is becoming more and more common, and this, in my opinion, is due to the following. Where a case of diphtheria occurs in a household it is good practice not to wait twenty-four or forty-eight hours for the result of a Schick test among contacts, but there and then to give temporary immunity by the injection of 500 to 1,000 units of antitoxin for children and 2,000 for grown-ups. This actually prevents the spread of the disease, and I have broken three threatened epidemics by a general use of this method among school contacts. But let us think of this also as to sensitization. If such temporarily immunized children are later on to be subject to a treatment conferring permanent immunity I hold, from practical experience, it is better to use the "one-shot" method with alum-precipitated toxoid, even though anaphylactic shock occurs, than to aim at giving three injections of toxoid-antitoxin mixture or toxoid-antitoxin floccules, for it is quite a chance whether one can or cannot complete the three injections. Further, in these days of motor *versus* horse transport the reaction to serum treatment of town-bred children gives no guidance to that of rural dwellers, particularly those in the agricultural industry or in contact with the horse population—in fact, I consider that 10 minims solution of adrenaline should be given before any serum injection, especially to children of an asthmatic parent, or those in close association with horses, as in an agricultural area.

In the last series of 135 first injections I gave, about sixty finished the course. The trouble is the lack of knowledge among the public. They do not know that in the presence of an epidemic the sera which confer late immunity will not make a positive Schick case immune in time, though one dose of 1,000 to 2,000 units of antitoxin will do so; but this immunity will not last. However, there is a great deal to be said for the battle shield which is impervious while the battle is going on. If we are to avoid parental opposition it seems to me that we must use the "one-shot" method with A.P.T., even though it gives, according to the authors of the article in your issue of November 28th, a much less certain immunity than the "three-shot" method.—I am, etc.,

Athenry, Co. Galway, Dec. 1st. C. H. Foley, M.B.

National Health and Physique

Sir,—Your account of the debate in the House of Lords on the health and physique of the nation (*Journal*, November 21st, p. 1058) brought out admirably its comprehensive character; but there was even in that debate a hiatus as regards the co-operation essential between the medical profession and physical educationists. The publication of the report of the Physical Education Committee of the British Medical Association has done perhaps more than anything else towards dispelling the prevalent idea that the neglect of this subject in boys' schools extends also to girls' schools. May I summarize the facts concerning the training of those who work in the secondary, private, and public girls' schools, under the inspection of the Board of Education and with the support of the doctors connected with those schools?

To qualify as teachers of physical education women must undergo a three-year course at a recognized college.

where they acquire a sound knowledge of physiology, anatomy, hygiene, and the principles and practice of massage and medical gymnastics, in addition to receiving practical instruction in physical subjects. Part of the training includes experience in the London and provincial hospitals, as well as in the college clinics, under medical supervision, so that the teachers are qualified to deal with the physically defective as well as with the normal child, especially as they hold either the diploma of the University of London in physical education or the diploma of the Chartered Society of Massage and Medical Gymnastics.

It is of paramount importance, when the Government is considering the extension of school medical and dental clinics and the opening of orthopaedic centres, that there should be still closer co-ordination of ideas between the members of the medical profession and of our own, by which we may profit from the guidance of the doctors and the latter realize that they have as assistants and collaborators fully trained physical educationists rather than mere expert gymnasts. We fully appreciate the support we have received in the past from the British Medical Association, and, in a desire to acquaint the public more fully with facts as to the qualifications of teachers of physical education, appeal for your assistance in spreading such information, which is of practical value to all concerned with public health.—I am, etc.,

BRONWEN LLOYD-WILLIAMS,
Member of the Ling Association of Teachers of Swedish Gymnastics.

London, N.W.6, Dec. 7th.

Universities and Colleges

UNIVERSITY OF OXFORD

Radcliffe Travelling Fellowship

An examination for a Radcliffe Travelling Fellowship of the annual value of £300, and tenable for two years, will be held at the University Museum, commencing on February 16th, 1937, at 10 a.m.

Candidates must have passed all the examinations required by the University for the B.A. and B.M. degrees. They must not have exceeded four years from the time of passing the last examination required for the B.M. The successful candidate must before election declare that he intends to devote himself during his tenure of the Fellowship to the study of medical science, and to travel abroad with a view to that study. The Fellowship will be vacated *ipso facto* by a Fellow who spends more than twelve months in the whole within the United Kingdom. The examination will occupy four days. Papers will be set in physiology, pathology, and preventive medicine, and a subject will be proposed for an essay; there will also be a practical examination in pathology. Any candidate desiring to offer in addition a special branch of either medicine or surgery must send notice of this to the Regius Professor of Medicine by February 11th. Intending candidates should send their names, addresses, qualifications, etc., to the Regius Professor of Medicine, University Museum, by February 11th.

TRUSTEES FOR THE NUFFIELD GIFT

It is announced that the following will act as trustees under the trust set up by Lord Nuffield to administer his gift of £2,000,000 for medical research: Mr. W. M. Goodenough, Chairman (appointed by Lord Nuffield); the Vice-Chancellor of the University; Sir Farquhar Buzzard, Professor Johnston, and Mr. R. W. Thornton (appointed by Lord Nuffield); the Registrar of the University (appointed by the Hebdomadal Council); Dr. Edward Mellanby (appointed by the Board of the Faculty of Medicine); Mr. Andrew Walsh and Major R. C. Rowell (appointed by the Radcliffe Infirmary); and Mr. A. H. Wood (appointed by the Wingfield Morris Orthopaedic Hospital).

UNIVERSITY OF LONDON

Appointment

Sir Cooper Perry, M.D., has been appointed Governor of the Royal Holloway College.

Studentship

Applications are invited for the Geoffrey E. Duveen Travelling Studentship, of the value of £450, for research in any aspect of oto-rhino-laryngology. The studentship is normally tenable in the first instance for one year, part of which shall be spent in study abroad, in accordance with a scheme to be approved by the Studentship Board, but it may be extended for six months or for one or two years, and during the extended period the student may be allowed to undertake research at the Royal Ear Hospital, or some other laboratory approved for the purpose. Full particulars can be obtained from the Academic Registrar, University of London, W.C.1, and prescribed forms of application must reach him not later than December 31st.

The Paul Philip Reitlinger Prize, offered this year for the best essay embodying the result of some research work on a medical subject carried out by the candidate, has been awarded to Roderic Alfred Gregory, M.Sc. (biochemistry), a student of University College, for his essay on "The Problem of the Cyclitols." The prize, of the value of £30, was founded with funds given to the University by Mr. Albert Reitlinger in memory of his son, a student of Middlesex Hospital Medical School, who died on December 3rd, 1911.

The Late Principal

At a meeting of the Court on December 2nd the chairman (Lord Macmillan) presiding, the following Resolution was passed, the Court standing in silence: "That the Court have learnt with the deepest regret of the death of Sir Edwin Deller. As a body they wish to record their high appreciation of his valuable and devoted services to the University; they remember with gratitude the conspicuous administrative ability which he displayed in the affairs of the University, and the great assistance which he rendered to the Court during the reconstitution of the University and the planning of its new home in Bloomsbury, and as individuals they desire to express their sincere sympathy with Lady Deller and her son in their bereavement."

At an emergency extraordinary meeting of the Senate held on December 7th, with the Vice-Chancellor, Mr. H. L. Eason, M.D., M.S., in the chair, the following resolution was adopted: "That the Senate desire, both as a body and as individuals, to set on record their sense of the incalculable loss that the University has sustained in the death of Sir Edwin Deller, and to express their profound gratitude for the devoted and single-hearted service he rendered to it. Mourning a great administrator, a wise counsellor, and a beloved friend, they offer their deepest sympathy to his family in their tragic bereavement."

SMALL-POX AT OLDHAM

We learn from the Ministry of Health that during the past few days four cases of small-pox (variola major) have occurred at Oldham. The first was that of an unvaccinated married woman who worked in the cardroom of a cotton mill in Chadderton. The other three cases are those of the woman's husband, who was vaccinated in 1916, her son, aged 15, who had never been vaccinated, and an unvaccinated woman who had been in contact with the original case. All these patients have been removed to hospital. The diagnosis of small-pox in the first patient was not established sufficiently early to ensure the successful vaccination of contacts, of whom there were at least ninety-eight in the woman's place of work and twelve at her home. The medical practitioners and public vaccinators in the districts concerned have all been notified of this outbreak, and arrangements have been made to keep all the known contacts under daily supervision until the period of danger has passed. The original case has not been traced to any human source of infection, and it appears not improbable that the infection was conveyed in the raw cotton which this patient handled. Cotton as a vehicle of infection of small-pox has frequently been suspected in the past, and in 1913 cases of this disease were reported in Oldham which were probably caused by infection from cotton.

A. Zabin (*Journ. Amer. Med. Assoc.*, May 2nd, p. 1588), who states that diphtheria coexistent with scarlet fever occurs in about one in every 10,000 cases, records an example in a boy aged 6. The history and appearances were typical of scarlet fever. The membrane on the throat was of the bright yellow colour of streptococcal membrane, and did not look like that of diphtheria. Cultures, however, were positive for diphtheria bacilli, which were found to be virulent. Rapid and uncomplicated recovery followed the intramuscular injection of 15,000 units of diphtheria antitoxin.

Medical Notes in Parliament

[From our Parliamentary Correspondent]

The House of Commons this week read the Public Order Bill a third time and debated the Expiring Laws Continuance Bill in committee. The House of Lords read the Trunk Roads Bill a second time and passed the Diseases of Fish Bill.

The Parliamentary Medical Committee arranged a meeting on December 10th which was to be addressed by Miss Gertrude Tuckwell on the Factory Act, and the Conservative Health and Housing Committee was to hear an address on abortion on December 9th from Dame Louise McIlroy.

On December 8th Sir Francis Fremantle was elected chairman of the House of Commons Select Committee on Publications and Debates. The committee approved a new format for the Official Report of Debates. The type chosen is approved by the Medical Research Council.

VOLUNTARY EUTHANASIA

Debate in the Lords

The House of Lords declined on December 1st, by 35 votes to 14, to give a second reading to the Voluntary Euthanasia (Legalization) Bill.

Lord Ponsonby, in moving the second reading of the Bill, first expressed regret that his place was not more worthily filled by the late Lord Moynihan. The latter's untimely death had not only deprived the medical profession and those who were his patients of a great friend and a notable figure, but also many, like himself, who had no professional contact with him but enjoyed his charming intercourse, which he was ever ready to extend to those to whose sympathy he responded. His absence that day was nothing short of a calamity for those who wished the promotion of the measure.

Continuing, Lord Ponsonby said that this was not a measure which was supported by a few cranks, but it had the strong support of a good many notable men and women of different professions and callings in our community. He knew that the medical profession was not in full agreement with the provisions of this Bill. But this was not exclusively a medical question ; it was an ethical, social, and legal one, and he hoped that the House would not be swept away by the eloquence of Lord Horder and Lord Dawson if they opposed the Bill. It sought to legalize, under certain conditions, the administration of euthanasia to persons desiring it and who were suffering from illness of a fatal and incurable character involving severe pain.

Change in Public Opinion

There had in the last generation been a great change in public opinion in regard to suicide. The law still remained, however, and suicide was legally regarded as a common law misdemeanour. However, a more lenient view was taken, and coroners' juries brought in verdicts of "Suicide while of unsound mind," which might be true in a few cases, but in many more were not grounded on a certificate of insanity, and were not, strictly speaking, justified by the evidence. By some throughout the ages suicide had not been regarded as a criminal offence. When Father Damien went out to attend the lepers he knew that he was going to kill himself. Another striking example was Captain Oates in the Antarctic. Scott said that his act was the act of a brave man and an English gentleman. Lord Ponsonby, in conclusion, hoped their lordships would give the Bill a second reading.

Lord Denman, who seconded the motion, said he wished to remove misapprehension that might be felt outside the House, and to say that it was not proposed, for example, that imbeciles and mental defectives should be deprived of life, or that old people who had become a burden to their relatives should be done away with, and it was not proposed that any person who wished to do so should be allowed—still less encouraged—to commit suicide. It was proposed that persons who were suffering from an incurable and fatal disease should be allowed by law, if they so desired, to substitute for a slow and painful death a quick and painless one. In that respect we were more merciful in our treatment of animals than we were of human beings. It had been said that euthanasia was practised to-day. Doctors, with a dose of morphine or other powerful drug, eased their patient's death. As the law stood, if a doctor practised euthanasia he did so at the risk of criminal prosecution or of professional ruin. It was unfair and unjust that a doctor should be put in that invidious position for performing what was really an act of mercy.

Rejection Moved

Viscount Fitzalan moved the rejection of the Bill. He said that it contained complicated provisions for its administration. Notwithstanding the voluntary character of the Bill, if it became an Act he should be indeed sorry for the relatives of the patient, who would have a great responsibility thrust upon them. He should be still more sorry for the doctors who would have the responsibility of perpetrating the act, and he should be most sorry of all for the unfortunate patient, who would be exposed to great mental anxiety while all the formalities laid down by the Bill were being prepared. Might he point out to the two noble lords in the House who were members of the medical profession that their duty was to cure and not to kill? He could not congratulate Lord Ponsonby on the title of his Bill. Instead of giving it a classical title he should have given it a good plain English one, understandable by the people, and called it what it was, a Bill to legalize murder and suicide.

Viscount Dawson's View

Viscount Dawson, who was heard with difficulty, said that compassion was not likely to be lost sight of among those who constantly witnessed human suffering. But he would not like an impression to go out that agonizing pain was a more frequent characteristic of disease than it really was. It would not be correct to say that most cases of cancer were characterized by agonizing pain. There was much more control of pain to-day than existed years ago. He agreed with Lord Fitzalan that the first thought and duty of the medical profession was not only to study the causes of disease, but to give the best of their minds—and they did give the best of their minds—to cure, and in the process of curing to assuage suffering in so far as it was compatible with that end. That was their main purpose. But they had to face the fact that there were diseases which were by their nature incurable. That did not mean that a disease was incurable at the outset, but diseases reached stages when the profession knew that a cure was not possible. It was their duty and privilege, not being able to cure, to do what they could to make the passage between painful illness and inevitable end as gentle and soft as they could.

Medical opinion had changed on this question. Fifty years ago the profession concentrated on the maintenance of life, in spite of the nature of the illness and even sometimes the imminence of death. It was an accepted tradition that it was the duty of the medical man to continue the struggle for life right up to the end. That had changed. There had gradually crept into medical opinion, as there had into lay opinion, the feeling that one should make the act of dying more gentle and peaceful, even if it did involve curtailment of the length of life. That had become increasingly the custom ; it was taken almost as something that was accepted. If they once admitted that they were going to curtail life by a single day they were granting the principle that they must look at life from the point of view of its quality rather than its quantity in such circumstances.

Steady Growth in the Idea of Mercy

There was no disharmony in this matter between the thoughts of the laity and the thoughts of the doctors. They saw a steady growth in the idea of mercy. They should leave thought to grow. There was a cautious but irresistible move to look at life and suffering from a more humane point of view. When a disease was incurable and the patient was carrying a great load of suffering their first course should be assuagement of pain, even if it did involve curtailment of life. The medical profession was a conservative profession, and had within it a tradition long established. This matter should be left to the gentle and slow growth of opinion among both the laity and the medical profession. A woman had an incurable

disease and incomparable suffering for nine years, but throughout that time she continued to work and to maintain her family. Eventually, crushed by pain, she asked for kindly timely death to ease her. Was the submerging of her sufferings to be denied her because death might be accelerated by three or four months? His own view would be that it should not. But there were no two people alike, and only her own doctor should decide whether her desire for death was something more than a passing effect of suffering.

Considerable changes in moral standards had taken place in the course of the years without any change in the statute law, and that was all to the good. There were many things which were much better evolved before the statute law tried to give them expression. He could not conceive of a more intimate relation than that which existed between a patient mortally ill and the doctor. If the Act were passed this relationship would be destroyed. The very idea of the sick chamber being visited by officials, and the patient, struggling with a dire and tragic malady, being treated as if he were a case of insanity, was something so opposite from the attitude of the doctor that, far from permitting the general growth of euthanasia in cases of incurable illness, it would have the opposite effect. Doctors would hesitate to touch it. They would not like to introduce such an atmosphere into the sick chamber, and the law would not only remain nugatory, but would deter those who were carrying out a mission of mercy.

Principle and Compassion in Contention

The Archbishop of Canterbury said that to him this was a most difficult question, in which principle and compassion contended. It must be approached on the broad basis of the clear moral principle that no man was entitled voluntarily to take his own life. There must be some exceptions to even that principle, but it was one thing to admit exceptions to that principle and another to give public statutory authority to it. They could not dismiss from their minds the possibly unforeseen effects upon the public conscience of for the first time giving definite legal enactment to the principle that there were circumstances in which a man might for his own sake end his life. He doubted whether a man who was professedly wracked with pain was capable of making a sound moral judgement; and would not the procedure contemplated by the Bill inflict an almost intolerable strain, where the strain was sufficient already, when a man had to ask himself, for his own sake or that of those dear to him, whether he should avail himself of this legal provision? Moreover, they could not dismiss from their minds the possibility of pressure brought by relations from other than motives of compassion.

He could not accept the view of those who contended that the duration of pain must needs be accepted as a divine appointment or means of moral discipline that no man may rightly decline. The whole, increasing, marvellous, and far-reaching use of anaesthetics pointed entirely the other way. But if there were extreme cases where it was morally legitimate to shorten a life of pain it should be left to the medical profession, exercising its intimate and responsible judgement rather than be dragged into the open and regulated by elaborate legal procedure. He would trust the honour and judgement of the medical profession, and would support the rejection of the Bill.

Lord Horder on the Doctor's Reference

Lord Horder, who spoke from the cross benches, said he did not think this was a matter on which the medical profession should be asked to give a definite lead. Indeed, he was sorry that medical men had joined in this movement and had associated themselves with propaganda before the Bill came before the House. Most doctors were very sympathetic towards the modern efforts to secure biological control before life began and while life lasted. But in the matter of putting an end to life, surely a new principle entered, and he submitted that that principle was outside the doctor's reference. If he might use the word, the doctor's reference was clear and generally accepted: it was to cure disease safely and quickly, and, if that ideal could not be achieved, then the doctor's duty must be to prolong life as long as might be, and to relieve pain both bodily and mental. The good doctor was quite aware of the distinction between prolonging life and prolonging the act of dying. The former came within his reference; the latter did not. He should regard with great concern any sanction which led to a different orientation with respect to the doctor's function, and yet it was difficult to see how such a reorientation could be avoided if the Bill became law.

It was true that the Bill provided that the act of euthanasia should be administered by other than the customary practitioner attending the patient; but was not that very fact a serious one in itself? If it was intended to replace the intimate relationship that existed in the majority of cases between doctor and patient, especially towards the close of life, by the introduction of two, or it might be more, strangers from Whitehall, was that substitution going to be in the patient's interest? The relationship between doctor and patient, when the patient was once assured of it, kept his moral intact. Noble lords had said in a general sense what were the cases in which legalized euthanasia might be sought. He (Lord Horder) suggested that the criteria which justified a decision to terminate life would be found to be extremely difficult to establish for particular patients, so difficult indeed that he should himself hesitate to undertake such great responsibilities as were placed upon the referee.

"Incurability" of Disease

The incurability of a disease was never more than an estimate based upon experience. If the Bill became law it would be in the main to cases of cancer that it would apply, for it was almost only in cancer cases that the criteria laid down could be thought to be fully established. Although it was common knowledge that the essential causes of cancer still eluded them, there were cases to-day of persons suffering from that disease who were living free from pain and who would not have been living ten years ago, and this was the result of advances made in treatment. That being so, and with the prospect of further advances in the near future, the criteria of fatality, if not of curability, would become more and not less difficult to establish as time went on. We never had so many means of relieving pain as we had to-day, and those means might be expected to increase. The Bill made soundness of mind essential to the administration of euthanasia. It was not that the mind of the patient suffering from a lethal illness was unsound—in the legal sense—but that the patient's mind was variable, with no certainty of purpose. The mental clarity with which those who supported this Bill viewed the situation had no counterpart in the alternating moods and confused judgement of the sick man.

Another possibility must be envisaged if the Bill became law, one which, he supposed, was quite unintended. Would not some persons who were afflicted with illness misinterpret the feelings of their friends and consider that they should avail themselves of the permission to end their lives? The two extremes of dying and being killed did not exhaust the possibilities for the stricken patient, because there was a middle course created by a kindly and skilful doctor who gave assistance to an equally kindly Nature, and that was what was at present implicit in the patient's question: "You'll stand by me, won't you?" and the doctor's assurance: "Yes; trust me."

The Marquess of Crewe said that the Bill before them would throw severe responsibilities on medical men. He could not vote in favour of the Bill. The Bishop of Norwich said that the elaborate safeguards which occupied so great a portion of the Bill showed a certain hesitation on the part of its supporters as to whether they had a right solution of the question. As Lord Dawson had said, this matter should be left to the growth of opinion within the medical profession. Members of the profession always shared with one another all that they had discovered, and there was no profession in which public opinion grew more securely.

The Earl of Listowel said that it was an interesting fact that both Lord Dawson and the Archbishop of Canterbury were in favour of taking human life in certain circumstances, while Lord Horder expressed the view that in certain cases the doctor must act on his own initiative in terminating suffering. That, however, would put upon the doctor a far heavier reponsibility than the Bill would place upon him. He was being asked to use his own initiative in performing an action which was at present contrary to law, and to risk

being turned out of his profession, in order to satisfy his moral conscience. That was the gravest responsibility that could be imposed upon him.

BILL PSYCHOLOGICALLY MISCONCEIVED

The EARL OF CRAWFORD said that the Bill was so misconceived from the psychological point of view that it would cause more suffering than it would ease. He contemplated with horror the strife and dissention its provisions would bring into family life, and with profound distress the unconscious pressure that would be placed on a sick man.

Viscount GAGE said that so far as the main principle of the Bill was concerned the Government would leave it to the free vote of the House. If, however, it received a second reading with the present congested state of business the Government could not give any definite guarantee of what facilities could be afforded the measure in the House of Commons.

The House divided, and, as stated above, the Bill was rejected by 35 votes to 14.

Misuse of the Red Cross

Lord TEMPLEMORE, in the House of Lords on December 2nd, moved the second reading of the Geneva Convention Bill. He said this was to give effect to Article 38 of the Geneva Conventions of 1929. The purpose of this Article was to give better protection to the use of the Red Cross on a white ground for distinguishing wounded and medical services of armed forces, and to prevent the use of similar Swiss arms or imitation of those arms as well as of imitations of the Red Cross by private individuals or associations, firms, or companies. The United Kingdom had ratified the Convention in 1931, and had agreed to give effect to Article 38 by December 23rd, 1936. Clause 1 provided that no one might use for the purpose of his trade or business or for any other purpose the Swiss arms and imitations of those arms, imitations of the Red Cross emblem, and any words closely resembling the words "Red Cross" or "Geneva Cross" without permission of the Board of Trade. Permission was given to allow the continued use of the Swiss arms or imitation thereof by those who had lawfully used them before 1932.

The Bill was read a second time, and committed to a committee of the whole House.

Protection against Poison Gas

In the House of Lords on December 3rd Lord HALSBURY asked the Government what protective measures were at present provided against an air attack by poison gas on large cities. He regretted that the provision of thirty million gas masks for the civil population was of no value whatsoever, as they could not know what gas would be used in the next war. In 1917 when American troops were put into the St. Mihiel salient they were warned that their gas masks were of no use against a gas which the Germans had just begun to use. The Americans did not take that warning, and a gas attack was made by the Germans. The Americans have never dared to publish the number of the casualties, but textbooks published in America referred to these as "the ten thousand martyrs," and that figure was probably not far out. At the end of the war a new gas was discovered that was able to penetrate any mask invented at that time, and since the war other new gases must have been produced against which present masks would be no protection. Experimental stations existed in the United Kingdom, in Germany, in France, and in Italy. A fortnight ago an attack was made by the Red Army in Spain against General Franco's forces with a new gas which penetrated all the masks and caused about 500 casualties. Samples of the poisoned air had been sent for analysis by chemists from Germany and Italy, and until that analysis was completed no gas masks could be devised which could protect men against that gas. Pavlov, the Russian physiologist, had put forward an idea for protection which had been declared by Hanslian, who was the greatest authority on poison gas, to be the best method of making a house gas-proof. This, however, involved sucking air down through a pipe above the roof and then passing it through water and dragging it by an electric pump into sealed rooms. That was nothing but a palliative for a short time. The country had to provide against attack by poison gas on a big town. Poison gas had always to be heavier than air, and would go down a channel between hills. In the case of London it would flow through the channel between the Surrey Hills and the line of hills to the north at Hampstead and Tottenham. He instanced the way in which gas used in 1917 by the Germans in the Suippes Valley was carried by the wind for thirty miles from its source, and how, when a gas factory blew up at Hamburg, the gas was drifted up the Elbe and caused deaths in ravines thirty-five miles from the source. A gas attack on London would travel from the West the whole of the way through London and even beyond it. It would be a wave of death right through London, and nothing was going to stop it. To fill with a lethal atmosphere up to thirty feet high the whole rectangle from Richmond to Barking Creek and between the two lines of hills he had mentioned under forty tons of gases would be required, which would come down in liquid form and go up as gas. His figures were taken from a manual issued by the War Office. There were plenty of aircraft in other countries which could come over to England with a load of four tons each, and ten such loads were enough to obliterate London. The raids could be repeated every hour of the day and night for six weeks. He and other persons had a great deal to do with gas during the war, and when they gave these warnings they were not talking simply from guesswork.

The MARQUESS OF DUFFERIN AND AVA said that the Geneva Gas protocol of 1925 abolished the use of gas in war time, and the Government sincerely hoped that resort would never again be had to that particular weapon. Precautions must nevertheless be taken, and in the event of a gas attack the advice to the public would be to get into a gas-proof room quickly and stay there until told the danger of gas was past. Lord Halsbury exaggerated the difficulties of making a room gas-proof. All that was necessary was to prevent the passage of currents of air through it by the use of wet newspapers for the windows and brown paper across the fireplaces. Most houses in London and other great cities could easily be made gas-proof by these simple devices. The Government had devised a second line of defence—namely, respirators—to be provided free of charge to all persons who could conceivably be in danger of gas from the air. These would protect against any known form of gas. The filtering material, which consisted of activated charcoal, to absorb two gases such as chlorine or mustard gas vapour, and a pad to stop the arsenical and other toxic gases, would protect as the ordinary Service respirator did. The only difference was that the Service respirator would last rather longer and was more suitable for strenuous exertion. The old bogy of an unknown gas which would pass through all respirators was not consistent with the facts. Gas suitable for war must be chemically stable at extremes of temperature. It must withstand the disruptive effect of a bomb when it dropped and must also vaporize easily at normal temperature. The groups of chemicals which afforded these properties were well known, and our chemists did not believe that any new gas of whose properties they were not aware could be used effectively in warfare. Moreover, the hypothetical new gas would also have to resist the antiseptic qualities of the respirator. So far as the Government knew there was no gas against which this respirator was not proof, and very soon production of the respirator would reach half a million a week. Lord Dufferin went on to summarize the arrangements made by the Government for anti-gas squads and the training of police, fire brigades, and other services at the civilian anti-gas school. The accommodation at that school had just been doubled, and another school would be set up in the North. Suggestions that forty tons of gas would exterminate London were ridiculous. The gas would not hang about in a great noxious cloud. Cross currents of air would dissipate it.

The EARL OF ONSLOW agreed in deprecating any overestimation of the danger from gas attack, and congratulated the Government on the steps it had taken to give instruction in anti-gas precautions and also first-aid in injury or damage through gas attack. Considerable efforts have been made to enlist the support of local authorities, of the Red Cross, and of the Order of St. John.

Lord HALSBURY said he could tell the Government from personal experience that putting damp newspapers round the crevices of a room would not make it gas-proof when dealing with a gas which had a lethal dose of one in five million. Speaking as a chemist he could give a gas to be tested against a Government mask. It was one of the methyl arsines. That would get through the Government mask quickly and the effect would be horrible. There was no need to drop gases by bomb explosion. The modern method was for an aeroplane to fly about twenty feet above the house-tops and for the gas to be sprayed from the back of the aeroplane. Mustard gas would hang about in any sort of soil for weeks on end, and a belligerent would have something much worse in the next war. He understood that the anti-gas schools taught that if a person was suffering from gas he ought to walk to the nearest station to receive first aid. The person who gave that instruction knew nothing about phosgene nor of the number of phosgene cases in the war that walked to the nearest station and dropped dead. With phosgene poisoning and a great many other poisons the sufferer should never be allowed to walk or move.

Lord STANHOPE begged the House not to take as accurate any statement that the Government had done nothing, although its programme had not been published.

Lord Halsbury's motion for papers on the subject was then negatived.

Alcohol and Road Accidents

On December 7th Mr. MESSER asked the Minister of Transport whether he was aware of recent experiments and investigations at the National Institute of Industrial Psychology, the conclusions of which had still further enforced the findings of the British Medical Association on the relation of small doses of alcohol and unreliability in motor driving; and if he would take steps, in view of the toll of road accidents, to bring this matter prominently once more to the attention of the motoring public. Captain A. HUDSON replied: Yes, Sir, the Institute furnished me with a copy of the report of a preliminary study of the relation of alcohol to road accidents, based upon a series of experiments, the results of which are stated to indicate that even moderate quantities of alcohol tend to make a driver accelerate unconsciously and maintain a less steady course. The report received considerable notice in the Press, and I do not doubt that this question will serve to draw further attention to it.

Yellow Headlights.—On November 24th Mr. HORE-BELISHA, replying to Mr. Salt, said he was aware of the order issued by the French Minister of Public Works to compel motorists in France to use yellow headlights on their vehicles as from April 1st, 1937, in the case of new cars, and from January 1st, 1937, for all motor vehicles. Expert opinion in this country which he had consulted, however, held that physiological advantages of this were not proved. The Medical Research Council and the Department of Scientific and Industrial Research had undertaken to pursue jointly further investigation, and he would certainly take their conclusions into account.

Fourth Valuation of Approved Societies.—Sir KINGSLEY WOOD told Mr. Rostron Duckworth on November 26th that the fourth valuation of approved societies and branches had recently been completed, and, although there had been many variations of schemes of additional benefits, the position over the insured population as a whole showed no appreciable change on balance. As there were over 5,000 schemes of additional benefits it was possible to give details of the changes made. Improvement in the financial position of societies, due to improvement in trade and industry, would not operate to improve additional benefits until after the next valuation.

Married Women and Payment of Benefit.—Mr. HOLLINS, on December 3rd, asked Sir Kingsley Wood if it was the general practice of approved societies to send all their married women who applied for benefit under the National Health Insurance Act to the regional medical officers before any payment of benefit was made; and whether he would consider the appointment of lady regional medical officers to examine all women sent to them by approved societies. Sir KINGSLEY WOOD, in reply, said that where an approved society was in doubt as to the incapacity for work of any member claiming sickness or disablement benefit it was entitled to refer the member to a regional medical officer for a second opinion. He did not agree that it was the general practice of societies to take this step in the case of all married women who applied for benefit. The regional medical staff already included some women, and all vacancies on the staff were open to qualified women applicants equally with men. He had no reason to think there was any general desire that all insured women referred to the regional medical service should be examined by women.

Alumina Dust and Fibrosis of the Lungs.—In an answer to Mr. Hollins on December 4th Mr. GEOFFREY LLOYD said the Industrial Pulmonary Diseases Committee of the Medical Research Council had prepared a report indicating that it had been unable to find any evidence that the inhalation of alumina dust, when substituted for flint in English china ware, had caused fibrosis of the lungs. The council was about to publish the report for the information of the pottery industry and others concerned.

Malarial Treatment for G.P.I.—Sir KINGSLEY WOOD told Mr. Sorensen on December 3rd that the numbers of patients in mental hospitals in England and Wales who have received malarial treatment during the last five years for which particulars are available were: 1930, 702; 1931, 737; 1932, 690; 1933, 639; 1934, 646. Over 10 per cent. of those treated in each of these years were discharged "recovered" within the year. Complete information was not available as to the total number of recoveries among those treated over the period of five years.

Unemployment Among the Deaf.—On December 7th Mr. SHAKESPEARE, replying to a question, said that figures obtained from the deaf schools for the period from 1923 to 1929 inclusive, and published in Dr. Eichholz's report "A Study of the Deaf in England and Wales," showed that the schools had information as to the after-careers of 93 per cent. of the children who had left school during that period, and that of these 75 per cent. were employed and 81 per cent. were living in satisfactory circumstances. These percentages might have fallen to some extent during the period of economic depression since 1929, but on the information before him he was unable to agree that the percentage of unemployment among the deaf was high, having regard to the disability from which they suffered. He was not satisfied of the need of a departmental committee to inquire into the position.

Circular to Insurance Practitioners.—Sir KINGSLEY WOOD, replying on December 7th to Sir Robert Tasker, said that Circular I.C. 324, issued to health insurance practitioners in 1930, was a statement of the law which was still in force. He was not aware of any reason for its withdrawal or amendment.

Advertisements in Stamp Books.—On December 7th Major TRYON informed Mr. Cary that the annual revenue derived from advertisements in books of stamps was £16,493. Of this sum £838 was obtained from advertisements of medicines and £3,074 from advertisements for the cure or relief of rheumatism and arthritis and of deafness. It was not his practice to consult the Minister of Health respecting such advertisements, but the Minister was aware of the general policy of the Post Office.

Tuberculosis in Glasgow.—Mr. WEDDERBURN, replying on December 7th to Mr. Stephen, said: The records of the Glasgow Public Health Department showed that in certain wards in Glasgow the numbers of cases of tuberculosis (pulmonary and non-pulmonary) notified in 1935 were as follows: Mile End ward, fifty-six; Whitevale ward, fifty-seven; Dennistoun ward, fifty-two; Partick East ward, forty-eight; Partick West ward, thirty-seven; and Cathcart ward, thirty-one.

Notes in Brief

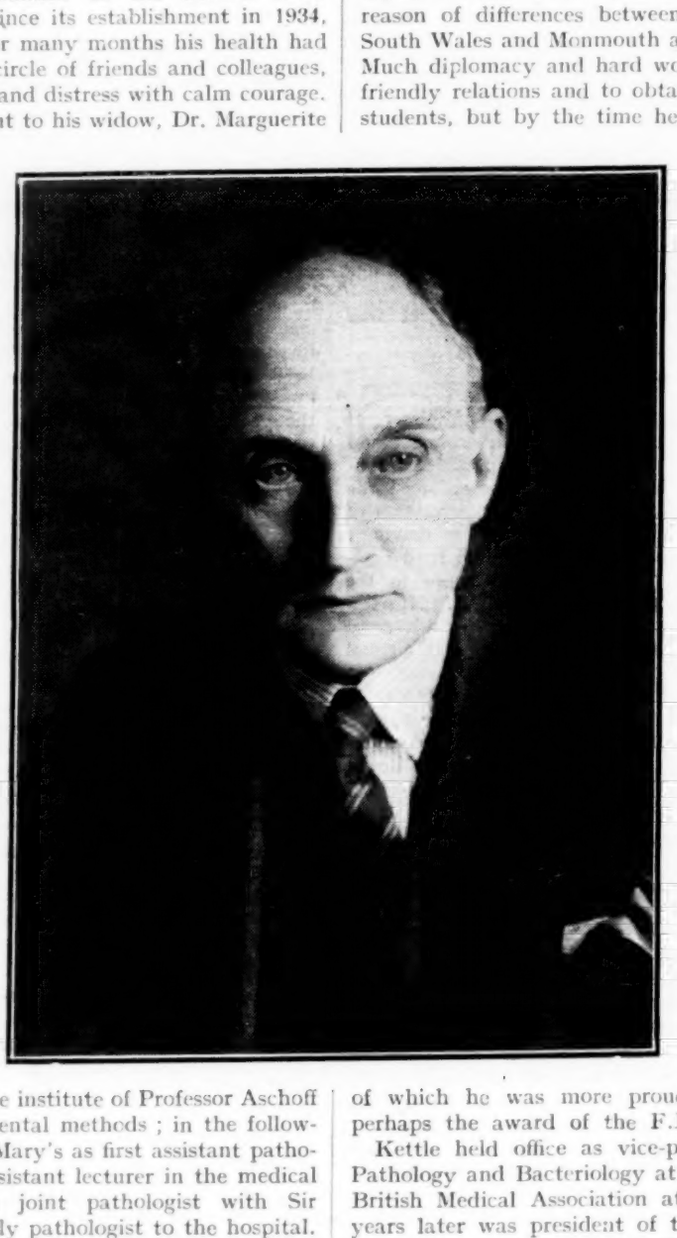
The Minister of Health cannot yet say whether introduction of the Public Health (Drainage of Trade Premises) Bill as a Government measure will be practicable in the present session.

There are 3,760 houses of two apartments or of one apartment in Glasgow in which one or more of the occupants suffer from tuberculosis or other notifiable disease.

Obituary

E. H. KETTLE, M.D., F.R.C.P., F.R.S.
Professor of Pathology, University of London; Director, Department of Pathology, British Post-Graduate Medical School

Professor Edgar Hartley Kettle, who had been director of the pathological department of the British Post-Graduate Medical School since its establishment in 1934, died on December 1st. For many months his health had caused anxiety to a large circle of friends and colleagues, and he endured much pain and distress with calm courage. Universal sympathy goes out to his widow, Dr. Marguerite Kettle, who has been on the staff of the *Lancet* since 1919, the year after their marriage.



He was born in London in 1882, and entered St. Mary's Hospital from Skipton School in 1901, with a scholarship in natural science. When still unqualified he acted as temporary house-surgeon at the French Hospital, and there first met Dr. J. A. Murray and became interested in cancer research. During his time as senior clinical clerk and dresser at St. Mary's he spent every available moment in the laboratory, and before graduating M.B., B.S.Lond. in 1907 was given the post of demonstrator in pathology. He stayed on as demonstrator and assistant pathologist until in 1908 he accepted an invitation from Alexander Paine to go to the Cancer Hospital, which had just built a new pathological department. He held this appointment for four years, paying a visit in 1911 to the laboratories of the institute of Professor Aschoff at Freiburg to study Continental methods; in the following year he returned to St. Mary's as first assistant pathologist to the hospital and assistant lecturer in the medical school. Later he became joint pathologist with Sir Bernard Spilsbury, and finally pathologist to the hospital. In 1924 he accepted an invitation to the chair of pathology and bacteriology in the Welsh National School of Medicine at Cardiff.

The twelve years at St. Mary's covered the war period, during which overwork undermined his health, which was never robust. He had an immense affection for and loyalty to the medical school, and his laboratory was the centre of its activities. He made several attempts to join the R.A.M.C., but was not accepted owing to a stiff knee. He therefore devoted himself to filling gaps in the depleted hospital staff while carrying on his work as pathologist, and in 1916 he undertook supervision of the 3rd London General Hospital laboratories. By this time he had finished his well-known book on *The Pathology of Tumours*; having studied Ford's technique of making drawings of microscope preparations, he drew all the beautiful figures himself. It was at St. Mary's that he began the studies of infection and immunity that led to the experimental researches on silicosis and other industrial diseases with which his name has since been prominently associated. His earlier published work was chiefly concerned with cancer and splenomegaly. At Cardiff he found the medical school much disturbed by reason of differences between the University College of South Wales and Monmouth and the University of Wales. Much diplomacy and hard work were needed to establish friendly relations and to obtain the material for teaching students, but by the time he left Cardiff the school was established in new buildings and the difficulties had been smoothed over. In 1927 Kettle was appointed to the university chair of pathology at St. Bartholomew's. He often referred to the following six years as the happiest in his life. A recurrence of ill-health delayed the taking up of this appointment for six months, but he soon felt part and parcel of the place. So certain was he of remaining at Bart's for the rest of his career that he even presented his journals to the library, but when the British Post-Graduate Medical School was being founded at Hammersmith he was urged on many sides to accept an invitation to go there and help to start a pathological department worthy of this new venture. Though he had only been a short time at St. Bartholomew's he was made consulting pathologist to the hospital after leaving its active staff, an honour of which he was more proud than any other, except perhaps the award of the F.R.S. this year.

Kettle held office as vice-president of the Section of Pathology and Bacteriology at the Annual Meeting of the British Medical Association at Bath in 1925, and three years later was president of the same Section when the Association met in Cardiff. He had also been president of the Section of Pathology of the Royal Society of Medicine. He served on a number of national and international conferences for the study of industrial disease, and was a member of the executive committee of the Imperial Cancer Research Fund and the Radium Beam Therapy Research. He had been examiner in pathology at the Universities of Cambridge, London, Glasgow, Wales, and Bristol, and in more recent years at Oxford and the Royal Army Medical College. He was also consulting pathologist to Queen Alexandra's Military Hospital, Millbank, and treasurer of the Pathological Society of Great Britain and Ireland.

Sir PATRICK LAIDLAW, F.R.S., writes:

It was my great privilege to know E. H. Kettle for many years, and with the lapse of time my admiration for him steadily increased. The life of a pathologist to a large hospital with a medical school attached is no easy one, for he is required to organize an important department of the hospital, work therein, teach in the school, and assist the clinical staff in many ways. Kettle's record at St. Mary's Hospital, at Cardiff, at St. Bartholomew's Hospital, and at the British Post-Graduate Medical School, Hammersmith, shows that he fulfilled all these requirements brilliantly and yet found time and energy to conduct experimental work in connexion with his own specialty. He will always be remembered for his experimental work on silicosis, which commenced with some experiments in collaboration with W. E. Gye in 1922. Gye became interested in other problems; Kettle never let go, but steadily and persistently made experiment after experiment, and was ultimately rewarded by discoveries which give us to-day a much better understanding of this disease. When it is remembered that each of these experiments takes months of waiting before pathological examination can commence, it will be realized that the work must be well and ably planned for any advance at all to be made in the short space of fourteen years. Further, the results of each experiment must be carefully weighed before any new advance is attempted. Kettle's achievement in this line of investigation is remarkable.

Kettle studied many other pathological problems selected out of those he encountered every day in the post-mortem room. He was deeply versed in the histopathology of tumours, and by publishing a small book and some papers on this subject he made valuable contribution to our knowledge in this direction. He accumulated with the passing years a great store of knowledge in human morbid anatomy and morbid histology, and this was always at the disposal of his brother pathologists or clinical colleagues. What is perhaps not so generally known is that Kettle had also very extensive knowledge of pathological processes in experimentally infected laboratory animals, and freely gave of his abundance of knowledge to his fellow research workers. He was of great assistance to us at the National Institute for Medical Research—for example, when we appealed to him to examine a quantity of post-mortem material collected from mice which had been infected with influenza virus. He reported his findings to us, and compared the appearances with those encountered in other infective processes in mice and men, and subsequently reported the results verbally to the Pathological Society. Unfortunately a full account of his observations will never be written now. Again, unable to foresee the future and shortly before his final illness, I sent Kettle some sections of mouse kidneys which puzzled me and which I hoped might interest him. In what must have been almost, if not quite, his last letter concerning pathological problems he wrote helpfully, as always, and made some suggestions for future work. These two incidents are typical. Kettle giving generously of his time and knowledge for the benefit of others.

His friends will all remember him, not only for his great abilities, knowledge, and achievements, but also for his generosity, his kindness, cheerfulness, and courage in the face of a constant physical disability and intermittent ill-health that would have daunted a weaker man.

Professor FRANCIS R. FRASER writes:

The later years of Kettle's life were devoted to St. Bartholomew's Hospital and to the British Post-Graduate Medical School, and it was these institutions that benefited most by his organizing abilities and by his high ideals and persevering endeavour for medical education. His colleagues throughout London, as well as at these two schools, felt his calm and steady influence, and they mourn the loss of a friend.

When he came to St. Bartholomew's Hospital in 1927 he held strong views on the teaching of pathology in the hospital medical schools of London. He felt that their departments of pathology had hitherto had no chance to bring the standard of undergraduate knowledge in this subject to the level reached in the schools in the provinces. The development of the schools in London was largely responsible for this. The honorary staffs of the clinical departments had the preponderant voice in the management of the schools; pathology was regarded as an aid to clinical practice, and provision for its staff and laboratory accommodation was limited by the close application of the subject to the practice of medicine. During the years Kettle was at St. Bartholomew's he strove to widen the scope of teaching in pathology and to utilize it as a means of scientific education. He found the department staffed to a large extent by young clinicians, who spent a very few years in the department before returning to clinical work, and though he fully recognized the value of such a training for the clinical staff it was his constant endeavour to obtain as members of his staff men who intended to follow careers in pathology. He reorganized the teaching so that the students should have as much help as possible from pathology at the outset of the clinical period and also during their years in the wards, for he believed firmly in the continued instruction in pathology during the final years of the curriculum. In spite of the considerable amount of routine work and teaching that he himself undertook he found time for what was probably his best research work—on the experimental production of silicosis. It was a continual struggle to build up the department he desired and to improve the standard of undergraduate pathology, and his health was feeling the strain.

When the opportunity came in 1935 to move to the new British Post-Graduate Medical School he was loath to leave uncompleted what he had striven for so devotedly, but the knowledge that he might be able to create a new department on the lines he had so long envisaged decided him. In eighteen months, with one long absence from ill-health, he built well, and lived to see a department in which even he was able to take a just pride. He was able to collect around him a group of enthusiastic colleagues and assistants, each eagerly engaged in research work in some branch of pathology and each imbued with Kettle's policy that the clinicians must be helped to practise the best medicine possible, but that to do this every member of the staff of the department of pathology must be an active investigator. Only those who worked beside him during these months at Hammersmith know how much he suffered from ill-health and of the administrative difficulties he overcame and can appreciate the courage of the man. He was always cheerful and encouraging, and always ready to help, but he had no patience with incompetence. The standard he set was a guide to the school in these early months of its inception, and he fought valiantly for his ideals. He had too little time for his own researches, but continued this work till his final illness, and there was a justifiable pride in his voice when a few months ago he told me of a letter he had received from a foreign friend who said that all that Kettle had written holds good. His death is a great misfortune and sorrow for his colleagues and for the British Post-Graduate Medical School, but he accomplished much and his influence remains.

Dr. E. L. MIDDLETON writes:

Professor Kettle will be remembered for his work on the aetiology of silicosis and the relationship between the effects on the lungs of inhaled dust and infection. In this field of research the rare combination of qualities which he so fully possessed found play and expression. Following the work of Gye and Purdy on the properties of colloidal silica by parenteral and intravenous injection, Gye and Kettle studied the interstitial reaction to silica and tubercle bacilli, separately and together. The prevailing theory that the action of silica depended on hardness, heaviness, and sharpness was set aside and a hypothesis based on solubility was followed. Two years later an advance was recorded when the effects on subcutaneous lesions of tubercle bacilli in the blood stream had been studied, and silica appeared to have some specific action on the growth of the tubercle bacillus. A further advance was made when, with Hilton, he developed the intratracheal method of administering dusts, and it became possible, using this technique, to identify "harmful dusts" and to study their action on the lungs, alone and with dead tubercle bacilli. Numerous experiments have been carried out by Kettle himself by which valuable additions have been made to the accurate knowledge on the subject of pneumoconiosis, and a technique has been developed and established which will enable other workers to extend it.

Kettle's work on silicosis is known and relied upon throughout the world. He was the Medical Research Council's representative at the International Conference at Johannesburg in 1930, and he had been a member of the Committee on Industrial Pulmonary Disease since its appointment in the same year. He was a member of the International Subcommittee on Pneumoconiosis recently appointed by the International Labour Office of the League of Nations, and he attended their meeting at Geneva just over two months ago. This sphere of work has sustained an irreparable loss, and his colleagues mourn the passing of a cheerful, courageous, and loyal friend.

J. THEODORE CASH, M.D., LL.D., F.R.S.

Emeritus Regius Professor of Materia Medica, University of Aberdeen

Professor Cash, who died on December 1st at Hereford, was well known for his researches in pharmacology when that branch of medical science was emerging into full recognition, and for many years did valuable work as teacher and administrator in the faculty of medicine of the University of Aberdeen.

John Theodore Cash was born in Manchester in 1854 and studied medicine at the University of Edinburgh, taking the M.B. and C.M. degrees in 1876, in which year he obtained also the diploma of M.R.C.S.Eng. For his M.D. thesis in 1879 he was awarded the gold medal. After graduation he served as resident physician at the Edinburgh Royal Infirmary, and then continued his scientific studies in Paris, Berlin, Vienna, and Leipzig. Cash's name soon became known among those concerned in forwarding research in pharmacology. The results of his work at home and on the Continent appeared in the *Transactions* and the *Philosophical Proceedings* of the Royal Society, in the *Journal of Physiology*, and other scientific periodicals. The earliest of his physiological papers, on the participation of the pancreas in the digestion of fat, was published in *du Bois Reymond's Archives* in 1880. Other important publications were concerned with the connexion between chemical constitution, physiological action, and antagonism (1884 and 1891), and the physiological action of nitrates of the paraffin series (1893). He was elected a Fellow of the Royal Society in 1887, and received the honorary degree of LL.D. from the Universities of Edinburgh and Aberdeen.

After his appointment to the regius chair of materia medica at Aberdeen Professor Cash soon identified himself with the faculty of medicine, holding the office of dean for some years, and representing the university on the General Medical Council from 1911 to 1919. Outside Aberdeen he examined in materia medica for the University of Oxford, and for entry into the Indian Medical Service. He joined the British Medical Association in 1880 and acted as secretary of the Section of Pharmacology and Therapeutics at the Annual Meeting in 1886 at Brighton. He was vice-president of the same Section in 1888 at Glasgow and in 1898 at Edinburgh, and president at the Aberdeen Meeting in 1914.

Professor Cash married the youngest daughter of John Bright, the Victorian statesman; she died in 1924, and there were two sons and two daughters. His favourite recreation was fly-fishing, and this led him to choose Hereford as his home after retirement from active work.

DUGALD CHRISTIE, C.M.G.

F.R.C.P., F.R.C.S.Ed.

The death took place on December 2nd, after a short illness, at his home in Edinburgh, of Dr. Dugald Christie, a well-known medical missionary known as "Christie of Mukden." He was born in 1855 at Kingshouse, near Glencoe, and at an early age entered business in Glasgow. While in business he decided to devote himself to work as a missionary, and after qualifying in medicine in 1881 went out to Manchuria as the pioneer medical missionary of the United Presbyterian Church. Dr. Christie was appointed to the Mukden Medical Mission in 1882, and there he spent the next forty years of his life. He added to his medical qualifications by becoming a member of the Royal College of Physicians, Edinburgh, in 1888, proceeding to the Fellowship in 1902, when he also obtained the certificate in tropical medicine. In 1911 he became a Fellow of the Royal College of Surgeons of Edinburgh.

Dr. Christie passed through stirring times in China during his long connexion with that country. Three times within ten years it was found necessary for foreign women and children to leave Mukden on account of racial feeling among the Chinese, and on these occasions he had various perilous adventures. Nevertheless he was popular with the Chinese, being known among them as the "Mukden Free-healing Doctor." He rendered them great service at times when Red Cross work became necessary, and during visitations of the plague he became an official and honorary medical adviser to the Government. Thirty years after he had begun work in the East he could write, "Hostility to foreigners is at an end. In all public emergencies, plague, war, famine, it is the missionaries, and of necessity especially the medical missionaries, that are looked to for advice and help. We count among our friends one Viceroy after another, and all the high officials; and those who travel in Manchuria to-day bear witness to the remarkable friendliness of the country people everywhere." From his earliest years in the country Dr. Christie resolved that a medical college should

be erected in Manchuria, and he personally trained a number of men in Western medicine. In 1911 the Viceroy Hsu Shih Ch'ang granted a site for the building of the Mukden Medical College, and in the following year the College was opened. Dr. Christie naturally became the principal of the College, as he had been superintendent of the Mukden Medical Mission. He resigned in 1923 on account of ill-health, and at this time the Foreign Mission Committee of the United Free Church of Scotland placed on record its sense of the greatness of the work which he had accomplished during his forty years' service in Manchuria. He was the recipient of many Chinese decorations, as well as the decoration of the Russian Red Cross, which he received in 1905, and a gold medal for plague work awarded him in 1911. From King George he received the C.M.G. In 1934 Edinburgh University recognized the degree of the Mukden Medical College as qualifying for graduate study at Edinburgh. Among his published works were *Ten Years in Manchuria* and *Thirty Years in Mukden*, published in 1914. An account of his life appeared in 1932 from the pen of his second wife, who survives him. Dr. Christie is also survived by three sons, all of whom are members of the medical profession, and by three married daughters.

A memorial service was held on December 5th at Fountainhall Road Church, and the interment thereafter in Grange Cemetery was attended by a large and representative gathering of members of the Church of Scotland and of the medical profession.

We regret to record the death of Dr. IEUAN G. THOMAS, who had been a very successful practitioner in the upper part of the Aberdare Valley for about forty years. He graduated M.B., B.Ch.Ed. in 1888, and very soon afterwards established himself as a general practitioner in the Aberdare mining area. He was of a very genial disposition, possessing a ready wit, was a general favourite with fellow practitioners, and had the capacity for making friends not only among colleagues but among his patients and the public generally. He interested himself in many activities outside his profession, and was influential in assisting many people and societies for the well-being of the locality in which he resided. Dr. Thomas (writes "A. T. J.") was the son of a well-known Welsh divine who was also a bard of repute known as "Myfyr Emlyn," and although the son did not manifest himself as having inherited the poetic tendency in breaking out into song he nevertheless showed that he had some poetry in his soul. He was a man of good physique and was fond of outdoor sport, and in his early days he was a keen member of the Volunteer Force which afterwards became the Territorial Army, and in which he was an officer for many years. He was also a keen motorist, being a pioneer in the use of the motor car, and very soon on the advent of the motor he abandoned the old-fashioned horse and trap for the car to take him to visit his patients. He had retired from active practice some six years ago, and was living in Radyn, near Cardiff, his son, Dr. Ben Thomas, having taken the practice over. Dr. Thomas died on November 22nd after a prolonged and distressing illness lasting over a period of three years. He was an active supporter of the British Medical Association, having been a member since 1890, and served as chairman of the North Glamorgan and Brecknock Division in 1919.

It is with regret that we have to record the death on December 2nd of Mr. THEODORE HENRY IONIDES, M.B., B.S.Lond., F.R.C.S.Eng. Mr. Ionides received his medical education at University College Hospital, and settled in practice in Hove, soon afterwards being elected to the posts of surgeon to the Royal Alexandra Hospital for Children, surgeon to the Women's Hospital, and finally surgeon to the Royal Sussex County Hospital. He was one of the pre-war general practitioners who specialized in surgery, gynaecology, and obstetrics. He obtained a great and well-deserved reputation among his colleagues, by whom he was held in the greatest respect. Many of them have memories of skilful operations performed by him on themselves and members of their family. During the war he was attached to the Second Eastern General Hospital in Brighton, with the rank of major. He served throughout the duration of the war at that hospital and performed large numbers of operations on the wounded men from the front. He was a member of the British Medical Association for nearly forty years, and held the post of vice-president in the Section of Gynaecology and Obstetrics at the Annual Meeting at Brighton in 1913. He was also president of the Brighton and Sussex Medico-Chirurgical Society, of which body he was an active member. Mr. Ionides was one of a well-known family, whose art bequests to the nation are preserved in the South Kensington Museum. He married a daughter of the late Dr. Cavarfy, and is survived by her and a son and daughter. The funeral service, held at the Parish Church of All Saints, Hove, was conducted by the vicar, Canon Meyrick, and was attended by a large number of his colleagues and friends. Mr. Ionides was a fine surgeon of a very unassuming nature and very highly respected by all.

Dr. KELBURNE KING GRIEVE, Deputy Director of Medical Service of the Gold Coast, died at Accra with tragic suddenness from heart failure on November 11th while playing in a tennis tournament. He was a younger son of Dr. Robert Grieve, one-time Surgeon-General, British Guiana, and was born on September 30th, 1883. He graduated M.B., Ch.B., in the University of Edinburgh in 1906, and then held a house appointment in the Royal Infirmary, Worcester, for a few years. After that he engaged for a time in general practice in various places. In June, 1913, he joined the West African Medical Staff as a medical officer, Nigeria, and served in the Cameroons as temporary lieutenant during 1915 and 1916 (wounded and mentioned in dispatches). He became a senior medical officer in October, 1927, and, on accelerated promotion, Deputy Director of Medical Service on transfer to the Gold Coast in October, 1933. Dr. Grieve was a most able and conscientious officer with marked ability for administration. A great deal of his work during his last few years concerned African staff, by whom he was held in the greatest affection and respect for his genial and kindly nature and for the unvarying patience and fairness with which he formed his decisions.

Dr. JOHN MACFEE, whose death occurred in Hampstead on December 5th, at the age of 92, formed an interesting link in the history of surgery. After taking his M.D. degree at Glasgow in 1865 he acted as house-surgeon in the Glasgow Royal Infirmary. He thus worked under Lord Lister (then Joseph Lister) during the earliest days of his investigations in antiseptic surgery, and had, in fact, the treating of the first successful case, a boy of 11 with compound fracture of the left leg. Dr. Macfee later practised in London, but retired many years ago. He took up water-colour painting as his hobby, and two years ago joined the Medical Art Society which was then formed, and exhibited at the summer exhibitions. He joined the British Medical Association in 1873.

Dr. JAMES ERNEST STRATTON, who died as the result of a road accident on November 30th at the age of 60, was a general practitioner of outstanding ability and character. Educated at Wyclif College, Gloucester, in 1897 he gained an entrance scholarship at University College Hospital, and took high honours in medicine and physiology in the London M.B. and M.D. examinations, and was awarded silver and gold medals. Later he acted as house-physician at the Wolverhampton and Staffordshire General Hospital. "R. K. F." writes: A very keen and able physician, Dr. Stratton had a most attractive personality. In spite of the demands made by the large

practice of the firm of which he was senior partner, he was a loyal supporter of the Camberwell Division of the British Medical Association, he was chairman of the Division from 1926 to 1927, had served for many years on the Metropolitan Branch Council, and on a national health insurance committee, besides being actively interested in the London Public Medical Service. He will be greatly missed in many different circles. He leaves a widow, two married daughters, and a son, who is a student at Guy's Hospital.

The death at the age of 40 of Dr. FREDERICK WILLIAM OLDERSHAW, medical officer of health for the borough of Weymouth, Dorset, has removed a most energetic public health reformer, whose native genius and capacity for strenuous work enabled him to achieve very much in but a few years. His medical student days were spent in the London Hospital, and he obtained the diplomas M.R.C.S., L.R.C.P. in 1924. He had won the Drapers' open science scholarship in the University of London. His interest in public health developed rapidly, and in 1928 he obtained the D.P.H. After serving as assistant school medical officer to the Nottinghamshire County Council he was appointed assistant medical officer of health for the borough of Swindon in February, 1928. In August of the following year he became medical officer of health for Colne. Two years later he was appointed medical officer of health to the borough of Weymouth, and in September, 1932, deputy medical officer for the port. During his tenure of office further progress was made in the extension of the suburban district of Westham, and the scheme for the redrainage of the borough was inaugurated. Housing conditions had always attracted Oldershaw's interest, and in this respect as well as others he succeeded in securing the adoption of needed reforms. He used his pen as well as his voice in educating the public. He joined the British Medical Association shortly after qualification, and held the commission of captain in the R.A.M.C. (S.R.). He leaves a widow and three children, for whom great sympathy is felt.

We announce with regret the death of Dr. GURTH EAGER, formerly of Hertford. Dr. Eager studied at King's College, taking the M.R.C.S., L.R.C.P. in 1906, and acted as house-physician to the children's department of King's College Hospital. During the war he was a captain in the R.A.M.C. and medical officer to the Baghdad Hospital. He became medical officer and public vaccinator in Hertford, and anaesthetist and ophthalmic surgeon to the Hertfordshire County Hospital, while at the same time acting as medical officer in charge of the malaria clinic, East Hertfordshire. He was a member of the British Medical Association, and had been honorary secretary of the East Hertfordshire Division from 1923 to 1927.

Dr. THOMAS WAYCOTT CHAFF, who had practised in Higher Broughton, Manchester, for the past thirty years, died on November 26th. A Devonshire man, and student of St. Bartholomew's Hospital, he qualified as M.R.C.S., L.R.C.P. in 1904, and before settling in general practice was house-physician and assistant house-surgeon to the Royal Berkshire Hospital, Reading. At Broughton he became public vaccinator and public assistance medical officer. He had been for many years a member of the Old Manchester Golf Club, and was its captain two years ago.

We have received from the honorary secretary of the Bradford Division the following tribute to Dr. JAMES TYSON KITCHIN, of whom an obituary notice appeared on December 5th (p. 1172): A man of modest and retiring disposition, of the simplest tastes and habits, he was little known save to his intimate friends. He was entirely without personal ambition, though his skill and his love of work might easily have brought him high reputation. At the hospital he left an honoured name and memory and was regarded with great affection, especially by the children who were his patients. His attention was given impartially to all, and he was courteous and considerate to the poorest. A lover of literature, he had read widely and kept what he called "My commonplace book"—daily jottings which revealed a mind of high order. He fulfilled Cardinal Newman's definition of the gentleman as one who never inflicted pain, and in his profession he was able to do more in that he ever sought to remove suffering. The city of Bradford has lost a valuable public servant and is the poorer for his death.

We announce with regret the death, at the age of 77, of Dr. RALPH GEORGE HEATHCOTE. Dr. Heathcote came of a well-known medical family, and after studying at Owens College, Manchester, he took the L.R.C.P.Ed., M.R.C.S.Eng., and the L.S.A. in 1882, and went into practice with his father in Chatham Street, near the old Manchester Infirmary. He left Manchester to take up a practice in Morecambe later, but returned to West Didsbury in 1908, where he remained until his retirement some years ago. Dr. Heathcote had been a member of the British Medical Association for some twenty-six years.

Dr. WALTER SIDNEY HART died on November 10th at his home in Roundhay, Leeds, at the age of 59. He studied medicine at Leeds, graduating M.B., Ch.B. of the university in 1910, and spent the whole of his professional life in that city, except for a period of war service in Egypt and India. He had been anaesthetist to the General Infirmary at Leeds, and afterwards held the same position at the Women's and Children's Hospital. Dr. Hart joined the British Medical Association in 1912, and was also a member of the Leeds and West Riding Medico-Chirurgical Society.

The death is announced at Amiens of Professor VICTOR PAUCHET, the Parisian surgeon, who had never completely recovered from the injuries received in a motor accident in 1934. He was born in Amiens in 1869 and he directed a surgical unit during the great war. He was attached to the Saint-Michel Hospital in Paris in the capacity of surgical specialist in gastroenterology. He should have presided this year at the annual meeting of the Association Française de Chirurgie.

We much regret to learn as we go to press of the death of Dr. C. COURTENAY LORD, a former colleague at the Headquarters of the British Medical Association, who was Assistant Medical Secretary from 1914 until his retirement at the end of 1930.

Medical News

The House of the British Medical Association, including the Library, will be closed for the Christmas holiday from 6 p.m. on Thursday, December 24th, to 9 a.m. on Monday, December 28th (Library 10 a.m.).

A dinner-meeting of the Hunterian Society will be held at Simpson's Restaurant, Cheapside, E.C., on Monday, December 14th, at 7.15 p.m., when there will be a discussion on "Frequency of Micturition in the Adult," to be opened by Mr. Alex. E. Roche and Dr. D. E. Denny-Brown.

A meeting of the United Services Section of the Royal Society of Medicine will be held on Monday, December 14th, at 4.30 p.m., when Major H. S. Blackmore will read a paper on "Air Raid Precautions, with Special Reference to their Medical Aspects."

The British Institute of Philosophy announces an address entitled "Culture, Philosophy, and Faith," to be given by Lord Eustace Percy on Tuesday, December 15th, at University College, Gower Street, W.C., at 8.15 p.m. Cards of admission may be obtained from the Director of Studies at University Hall, 14, Gordon Square, W.C.1.

The fourteenth Voyage Médical International on the Riviera will take place from December 26th to January 2nd, under the presidency of Professor Laignel-Lavastine of the Paris Faculty of Medicine. All medical men and their families are invited to join at the inclusive price of 1,000 francs and a reduction of 50 per cent. on the French railways. Full information may be had from the Federation of the Health Resorts of France, Tavistock House (North), Tavistock Square, W.C.1.

It has now been definitely decided to hold the fourth International Paediatric Congress (which was to have taken place this year) on September 27th, 28th, 29th, and 30th, 1937, in Rome, concurrently with the meeting of the International Society for the Protection of Infancy. The programme arranged for the 1936 congress will be adhered to, but an extra day, September 30th, will provide additional time for communications on the subjects to be discussed. Members desirous of taking part in these discussions must send a précis of their proposed communications to the secretary of the British committee, Dr. Leonard Findlay, 14, Wimpole Street, W.1, before May 30th, 1937, so that they may be forwarded to the Italian committee, with which the ultimate decision rests.

The Society of Medical Hydrology and Climatology of Belgium will celebrate the thirtieth anniversary of its foundation on December 12th, under the presidency of Dr. Terwagne.

The fifteenth annual dinner and dance of the British Serbian Units Branch of the British Legion was held at Lysbeth Hall, Soho Square, W., on December 5th, with Dr. C. P. Cooke-Taylor, the president, in the chair. The large attendance was a testimony to the continuing good will between England and Yugoslavia. The toast of "The Guests" was proposed by Mr. O'Donoghue, chairman of the British Serbian Branch of the British Legion, and seconded by Mrs. Fetherston-Godley. His Excellency M. Grouitch, the Yugoslav Minister, in replying, paid tribute to the way in which the British medical services had helped Yugoslavia in the late war. The toast of "The Branch and its President" was proposed by Admiral Sir Henry Bruce, president of the metropolitan area of the British Legion. Dr. Cooke-Taylor, in replying, said how much he had been impressed by the hospitality and kindness he had received when visiting Yugoslavia. Miss Marx, the honorary secretary and treasurer, was presented with a wrist watch made of white gold as a token of gratitude for the wonderful work she had done for the branch. Among those present were Mme Gouritch, General M. Christitch, Dr. Radovanovitch, Colonel A. E. Kidd, who was in command of No. 33 Stationary Hospital, Mr. Edmund Jones, F.R.C.S., in command of the Wimborne Unit of the Serbian Relief Fund, and Colonel P. H. Mitchiner, F.R.C.S.

The Ilford Medical Society held a highly successful dinner and dance at the Piccadilly Hotel, London, on November 26th, with Dr. Wilfred Steen in the chair in the unavoidable absence of the president, Dr. W. Thomson Brown. The guests of the society were the Mayor of Ilford, Sir George and Lady Hamilton, Councillor Arthur and Mrs. Green, and Mr. and Mrs. Boorman. The attendance was a record one for the society.

A very successful annual dinner and ball was held by the London Jewish Hospital Medical Society on Sunday last, when Mr. Arnold Sorsby, M.D., F.R.C.S., presided over a gathering of nearly four hundred members and their guests. The health of the guest of honour, Lord Snell, chairman of the London County Council, was proposed by the Marquess of Reading, president of the London Jewish Hospital. Dr. E. Miller was responsible for the toast of "The Guests," for whom Sir John Herbert Parsons, F.R.S., responded. Mr. Coleman Smith proposed the toast of "The London Jewish Hospital," to which Mr. J. Cofman-Nicoresti responded. An announcement was made by Mr. Maurice Sorsby, M.D., F.R.C.S., that Mr. Smith had given £5,000 to the hospital. Mr. L. H. Savin, M.D., F.R.C.S., proposed the toast of "The Society and its President," to which Mr. Arnold Sorsby responded. The guests included Dr. and Mrs. J. A. H. Brincker, Dr. and Mrs. Vernon Wiley, Dr. and Mrs. A. Randle, Dr. A. D. Morris, Mr. and Mrs. Zevada, and members of the Council of Management.

On December 3rd the Right Hon. George Lansbury, M.P., presented certificates and prizes to the successful students in the course of studies laid down by the Institute of British Surgical Technicians. The principal, Mr. F. J. Harlow, Ph.D., B.Sc., said it was the first time that a systematic training had been undertaken by the members of the surgical industry and that the certificates were presented by the Chelsea Polytechnic in conjunction with the Institute. Mr. Lansbury said the fact that the young people in the industry had undertaken systematic study of anatomy and other sciences which were at the base of their work was a very hopeful sign, and he hoped that in the years to come one would not see patients fitted to appliances but appliances fitted to patients.

On December 3rd the foundation stone was laid of the new building of the Faculty of Medicine of Paris, on the site of the old Charité Hospital.

The July–September issue of the epidemiological report of the Health Section of the League of Nations contains the conclusion of the article on typhus and other exanthematic rickettsia infections by Drs. Yves Biraud and S. Deutschman, which appeared in the January–March issue.

An anonymous gift of £14,000 has been received through Sir George Tilley towards the fund for rebuilding Westminster Hospital Medical School.

Letters, Notes, and Answers

All communications in regard to editorial business should be addressed to **The EDITOR, British Medical Journal, B.M.A. House, Tavistock Square, W.C.1.**

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The address of the B.M.A. Scottish Office is 7, Drumsheugh Gardens, Edinburgh (telegrams: *Associate, Edinburgh*; telephone: 24361 Edinburgh), and of the Office of the Irish Free State Medical Union (I.M.A. and B.M.A.), 18, Kildare Street, Dublin (telegrams: *Bacillus, Dublin*; telephone: 62550 Dublin).

QUERIES AND ANSWERS

Vasospasm after Charcoal Treatment

Mr. A. F. Cowan (Lincoln) writes: I recently gave a man aged about 50, who had been suffering from an intractable septic condition, an intravenous injection in the arm of 5 c.cm. of a fine 2 per cent. suspension of animal carbon in distilled water. Several minutes after the injection the whole forearm and hand became entirely anaemic. This gradually improved, leaving the thumb, thenar region, and a patch on the dorsum of the hand "dead." There was a very considerable amount of pain in the forearm and hand. I take it that this was due to a vaso-constrictor action—chiefly of the radial and posterior interosseous distribution. Now, two weeks later, after treatment with heat, infra-red rays, and ultra-violet light, the pain is disappearing, but there is a small patch of superficial gangrene

at the tip of the thumb. I should be glad if any of your readers would explain this phenomenon, and also whether it has occurred in other cases similarly treated. There was no evidence of infiltration round about the vein.

Staining for Reticulocytes

"J. B. L." inquires if any reader would be good enough to describe a simple and effective method of demonstrating reticulocytes in blood by staining with brilliant cresyl-blue in normal saline when access to a laboratory is not available.

Onychopathy

Dr. EDWIN F. D. BAKER writes: I would be grateful for the assistance of your readers in the diagnosis and treatment of a case of a small girl, aged 4 years, who at the age of 18 months developed infantile eczema. This soon cleared up with treatment, but left the nails of both hands affected. They became pitted, distorted, and brittle—in fact, very unsightly. The toe nails remained unaffected and, strangely enough, the nail of the right thumb, which she is in the habit of sucking. All treatment and investigations at several London skin clinics have so far been negative.

LETTERS, NOTES, ETC.

"Electrotherapy and its Future"

Mr. J. W. KOLBERT, director of Hanovia Ltd., writes: May one of the "instrument makers" comment on one aspect of Dr. Turrell's paper published in your issue of November 21st? In it he states that since the war makers of equipment, relying mainly on sales of their wares to technical assistants, "devote any inventive genius which they may possess to improvement in the chromium plating or bakelite finish of their apparatus." His context infers that they have ceased looking to medical men for advice on the development of their instruments, and now produce only repetition copies of early apparatus with superficial refinements but lacking in technical development. May I let the record of one company speak for itself? During six years past we have achieved (*a*) the development of electronic discharge tubes of self-starting type, which operate in any position, and have 90 per cent. greater efficiency than earlier types; (*b*) the production of three new lamps for focal actinotherapy alone; (*c*) the rheostat-control output stabilizer which at last gave to the practitioner mercury arc lamps needing no periodical adjustments in dosage standards; (*d*) much other work, including new designs in reflectors which give better distribution of radiation, and new shapes in quartz applicators, made to specialists' suggestions, which have enabled fresh conditions to be effectively treated. We could not have progressed thus far without close co-operation with the medical profession. We believe that better equipment means better therapy, and that better therapy in turn demands better equipment. And I have no doubt that other firms, specializing in other branches of electrotherapy, can produce equal records of technical achievement. It is gratifying to add that we do not "rely on the sales of our wares to technical assistants," but are finding our users almost entirely among registered medical practitioners.

Recreative Physical Training

The first annual report of the Central Council of Recreative Physical Training has now been issued. The aim of the council is to assist in the improvement of the health, physical and mental, of the community by developing physical activities of all types, by ensuring that the fullest possible use is made of existing facilities, and by instituting provision of facilities in districts where these are lacking. The sponsors of the Central Council were the Ling Association of Teachers of Swedish Gymnastics and the National Association of Organizers of Physical Education; both realized the need of a central organization to establish and carry out a co-ordinated programme for the improvement of the health of the community. A preliminary survey proved that the efforts of voluntary organizations and local authorities were hampered by shortage of leaders and lack of facilities. The Central Council has established a close liaison with the National Playing Fields Association, with voluntary organizations, both at headquarters and in the provinces, and with the education authorities. The report quotes the Physical Education Committee of the British Medical Association, which suggested that voluntary organizations should be encouraged to make use of the Central Council. Much useful work has already been accomplished. Training courses have been arranged for men and women leaders, and a national register of leaders has been compiled, covering the whole field of physical recreation. Representatives of the council have addressed meetings in many parts of the country, much advisory work has been carried out, and a number of leaflets have been published. Contact has also been established with similar bodies abroad, and the Central Council was represented at the International Congress of Leisure and Recreation held at Hamburg. The report states that the council realizes that Great Britain can learn much from foreign countries in the matter of physical recreation.

Bromide Intoxication

"B. P." writes: The correspondence produced by the article on bromide poisoning (*Journal*, November 14th, p. 957) is disappointing to the general practitioner. Potassium bromide is one of the few drugs in which he has faith, and he would like to know if ill effects from its use are really common. The authors of the paper say that they are not dealing with epilepsy, but the medical officers of asylums and institutions for epileptics are the very people who ought to be able to give us the facts. In spite of the claim of some makers of phenobarbitol that it is a specific for epilepsy, many patients do better on potassium bromide, and it is still largely used. Another point: there seems to be a general impression that sodium bromide is less toxic than the potassium salt but less effective. What are the facts? I myself have taken 25 grains of sodium bromide daily for nine years to prevent attacks of a severe form of migraine and an occasional attack of *petit mal*. No ill effects have been observed except that its use takes the edge off life in more senses than one. Few of us will derive much help from Dr. Robertson's letter (*Journal*, December 5th, p. 1168).

Hospital Flag Days in London

Seventy-seven voluntary hospitals, which in the past have raised about £30,000 a year by means of street collections or "flag days" in London, have agreed, at the suggestion of the Commissioner of Police of the Metropolis, to combine their appeals for 1937. The Commissioner of Police has fixed the week preceding the Coronation—May 2nd to 8th—as "hospitals week." On Tuesday, May 4th, there will be one street collection for the whole of the metropolitan boroughs, and on Saturday, May 8th, one for the outlying areas extending as far as the limits of the metropolitan police district. The central committee representative of the seventy-seven London hospitals participating, under the chairmanship of Lord Luke, is working out the details of the scheme, and headquarters have been established at 36, Kingsway, W.C.2.

Appendicitis and Cancer of the Caecum

Dr. S. CROWN (London, W.9) writes: The following is yet another case of appendicitis and carcinoma of the caecum. The late Mr. Donald Armour operated on a female patient of mine, aged 60 years, for appendicitis in 1926, and found in addition a carcinoma of the caecum; the portion of the caecum involving growth and the appendix were removed. A faecal fistula developed, but soon healed. In 1928 small intestine obstruction developed owing to bands; at operation (by the late Mr. Legg) there was no recurrence seen, and she has remained well since.

London Fever Hospital

The secretary of the London Fever Hospital, Liverpool Road, N.1, writes: Information in regard to the accommodation available at this hospital was recently circulated to members of the medical profession in the London area. There have, as a result, been so many inquiries in regard to private rooms that we shall be most grateful if you will allow us space in your columns to make it known that the fees for such accommodation here are from seven to ten guineas a week inclusive.

Diaries and Calendars

Messrs. John Walker and Co. Ltd. (Farringdon House, Warwick Lane, E.C.4) have sent us a selection of diaries and calendars for 1937. The bindings are in a variety of pleasing colours, and the prices range from 1s. to 5s. and upwards. Messrs. Walker have once again attained that high quality of production for which they are noted.

Vacancies

Notifications of offices vacant in universities, medical colleges, and of vacant resident and other appointments at hospitals, will be found at pages 58, 59, 60, 61, 62, 63, 66, and 67 of our advertisement columns, and advertisements as to partnerships, assistantships, and locumtenencies at pages 64 and 65.

A short summary of vacant posts notified in the advertisement columns appears in the *Supplement* at page 323.